

UNIVERSITÄT WÜRZBURG

Module Catalogue

for the Subject

Biochemistry

as a Master's with 1 major with the degree "Master of Science" (120 ECTS credits)

Examination regulations version: 2017 Responsible: Faculty of Medicine Responsible: Faculty of Chemistry and Pharmacy

JMU Würzburg • generated 19-Apr-2025 • exam. reg. data record 88|025|-|-|H|2017

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The subject is divided into

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Learning Outcomes

German contents and learning outcome available but not translated yet.

Wissenschaftliche Befähigung

- Nach erfolgreichem Abschluss des Master-Studiums verfügen die AbsolventInnen über vertiefte Kenntnisse des wissenschaftlichen Arbeitens in der Forschung und Anwendung der Biochemie und ihrer inhaltlichen Grundlagen. Sie haben sich dabei auf einen der beiden angebotenen Schwerpunkte "Molekulare Lebenswissenschaften" oder "Molekulare Onkologie" spezialisiert, indem sie die diesen Schwerpunkten zugeordneten Module (Vorlesungen, Kurspraktika und Seminare) absolviert haben. Sie besitzen neben den vertieften fachspezifischen Kenntnissen auch Abstraktionsvermögen, analytisches Denken, Problemlösungskompetenz und die Fähigkeit, komplexe Zusammenhänge zu strukturieren. Die Grundlagen hierfür werden in den o.g. Veranstaltungen vermittelt und mittels Klausuren, Kolloquien, Protokollen oder Referaten überprüft.
- Die AbsolventInnen besitzen nach Erlangung des Masters die Kompetenzen, ein gegebenes wissenschaftliches Problem planvoll und nach den Regeln der guten wissenschaftlichen Praxis zu bearbeiten, darunter unter anderem sich unter Zuhilfenahme der Kenntnisse in der Literaturrecherche in neue Aufgabengebiete einzuarbeiten und Veröffentlichungen in internationalen Journalen im Kontext der wissenschaftlichen Literatur kritisch einzuordnen und zu bewerten. Sie sind in der Lage, das erworbene Wissen selbständig anzuwenden und auf neue Aufgabenstellungen zu übertragen, Experimente auf Grundlage biochemischer Methoden strukturiert und in vorgegebenem zeitlichem Rahmen durchzuführen und zu dokumentieren, die ermittelten Daten kritisch zu analysieren und die Ergebnisse schriftlich zusammenzufassen. Außerdem können Sie ihre selbständig durchgeführten Projekte vor einem Publikum darstellen und die gewählte Methodik in fachlicher Diskussion verteidigen. Vermittelt werden diese Fähigkeiten im Rahmen von Labor-Praktika im dritten Fachsemester und der Master-Arbeit. Die Überprüfung der Zielerreichung findet durch die Erstellung von Praktikums-Protokollen und nicht zuletzt der Master-Thesis und deren Präsentation mit anschließender Diskussion im Abschluss-Kolloquium statt.

Befähigung zur Aufnahme einer Erwerbstätigkeit

- Die AbsolventInnen besitzen Abstraktionsvermögen, Problemlösungskompetenz und die Fähigkeit, komplexe Zusammenhänge in analytischer Herangehensweise zu strukturieren. Die Grundlagen hierfür werden in Vorlesungen, Seminaren und Kurspraktika der verschiedenen Disziplinen der Lebenswissenschaften vermittelt und mittels Klausuren, Kolloquien, Referaten oder Protokollen überprüft.
- Die AbsolventInnen sind auch in der Lage, ihr theoretisches Wissen in der Praxis anzuwenden und können mit den erlernten wissenschaftlichen Methoden auch unbekannte Probleme aus unterschiedlichen fachlichen Perspektiven analysieren und bearbeiten. Sie sind es dabei gewohnt, in einem Team aus KommilitonInnen, KollegInnen und/oder WissenschaftlerInnen konstruktiv und zielorientiert zusammenzuarbeiten. Der Praxisbezug ist durch einen hohen Anteil an Laborpraktika sowohl als Kurspraktika, individuelle Forschungspraktika und nicht zuletzt der Master-Arbeit gegeben, deren erfolgreiche Absolvierung durch Protokolle bzw. die Master-Thesis überprüft wird.
- Als interdisziplinärer und internationaler Studiengang, dessen Veranstaltungen in der Regel in englischer Sprache unterrichtet werden, fördert der Master-Studiengang Biochemie von Beginn an fachübergreifendes Lernen, Denken und Verstehen, sowie durch tägliche Übung auch die Kommunikations-Kompetenz in Englisch, der international anerkannten Wissenschafts-Sprache. Diese auf dem breiten Fundament der im Bachelor Biochemie erworbenen Kompetenzen aufbauende, vertiefte und spezialisierte Wissensbasis und Methodenkompetenz, sowie die ein-

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geübte Teamfähigkeit und Weltoffenheit können die AbsolventInnen gewinnbringend in ihrer Berufspraxis einsetzen.

Persönlichkeitsentwicklung

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- Die AbsolventInnen sind bereit und in der Lage, Verantwortung für ihr Handeln und für andere zu übernehmen. Sie verfügen über die kommunikativen Fähigkeiten, komplexe Sachverhalte und Standpunkte im Team zu entwickeln, zielgruppengerecht darzustellen und reflektiert gegenüber abweichenden Positionen zu verteidigen und weiterzuentwickeln. Diese Fähigkeiten zur Übernahme von Verantwortung, Diskussionsbereitschaft und Teamfähigkeit sowie Eigenverantwortung und Selbständigkeit erlernen und beweisen die Studierenden in erster Linie durch die Anfertigung von Praktikums-Protokollen und der Abschlussarbeit, deren Zielerreichung mit der Bewertung der Arbeiten überprüft wird.
- Das Curriculum des Masters Biochemie ermöglicht den Studierenden, ein Erasmus-Studium oder ein Laborpraktikum an einer ausländischen Universität durchzuführen. Der Prüfungsausschuss Biochemie wacht dabei über die Einhaltung der wissenschaftlichen Standards und ein adäquates Projekt. Die Studierenden können dadurch wertvolle persönliche Erfahrungen erwerben und ihren sprachlichen und kulturellen Horizont öffnen.
- Erst die durch Einübung und Ermutigung erlangte Fähigkeit zur Kritik und Reflexion (inklusive Selbstreflexion und Selbstkritik) ermöglicht eigenständiges Denken und selbstbestimmtes Handeln, das vor sich selbst und anderen begründet ist und rational kommuniziert werden kann. Diese Kritikfähigkeit und Fähigkeit zur Selbstreflexion erlernen die Studierenden mittels Feedbacks durch Lehrende und Studierende zu ihrem Vortrag in Seminaren, die vermehrt im Masterstudium stattfinden.

Gesellschaftliches Engagement

• AbsolventInnen des Masters Biochemie werden durch ihr Studium in die Lage versetzt, zu gesellschaftlich kritisch und kontrovers diskutierten Fragen, die Themen der molekularen Biowissenschaften betreffen, wissenschaftlich fundiert begründete Position zu beziehen. Sie sind sich darüber hinaus bei ihrer Arbeit immer ihrer ethischen Verantwortung gegenüber der Gesellschaft und der Umwelt bewusst und reflektieren ihr Handeln diesbezüglich stets kritisch. Vor allem im Rahmen der individuellen, mehrwöchigen bis ganzsemestrigen Laborpraktika und der Abschlussarbeit setzen sich die Studierenden mit aktuellen Forschungsthemen selbständig und kritisch auseinander. Hierzu gehört auch die Reflexion möglicher Folgen der eigenen Arbeit für Umwelt und Gesellschaft und der daraus resultierenden ethischen Fragestellungen. Die Zielerreichung wird durch das erfolgreiche Bestehen der Praktikums-Protokolle und der Abschlussarbeit überprüft.

Abbreviations used

Course types: \mathbf{E} = field trip, \mathbf{K} = colloquium, \mathbf{O} = conversatorium, \mathbf{P} = placement/lab course, \mathbf{R} = project, \mathbf{S} = seminar, \mathbf{T} = tutorial, $\ddot{\mathbf{U}}$ = exercise, \mathbf{V} = lecture

Term: **SS** = summer semester, **WS** = winter semester

Methods of grading: **NUM** = numerical grade, **B**/**NB** = (not) successfully completed

Regulations: **(L)ASPO** = general academic and examination regulations (for teaching-degree programmes), **FSB** = subject-specific provisions, **SFB** = list of modules

Other: **A** = thesis, **LV** = course(s), **PL** = assessment(s), **TN** = participants, **VL** = prerequisite(s)

Conventions

Unless otherwise stated, courses and assessments will be held in German, assessments will be offered every semester and modules are not creditable for bonus.

Notes

Should there be the option to choose between several methods of assessment, the lecturer will agree with the module coordinator on the method of assessment to be used in the current semester by two weeks after the start of the course at the latest and will communicate this in the customary manner.

Should the module comprise more than one graded assessment, all assessments will be equally weighted, unless otherwise stated below.

Should the assessment comprise several individual assessments, successful completion of the module will require successful completion of all individual assessments.

In accordance with

the general regulations governing the degree subject described in this module catalogue:

ASPO2015

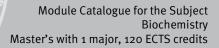
associated official publications (FSB (subject-specific provisions)/SFB (list of modules)):

05-Jul-2017 (2017-43) 27-Mar-2019 (2019-19) 24-Mar-2020 (2020-25) 13-Dec-2023 (2023-110)

This module handbook seeks to render, as accurately as possible, the data that is of statutory relevance according to the examination regulations of the degree subject. However, only the FSB (subject-specific provisions) and SFB (list of modules) in their officially published versions shall be legally binding. In the case of doubt, the provisions on, in particular, module assessments specified in the FSB/SFB shall prevail.

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Compulsory Electives 1

(50 ECTS credits)

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Focus - Molecular Life-Sciences

(50 ECTS credits)

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Subfield - Structural and Functional Biochemistry

(30 ECTS credits)

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Module title			Abbreviation			
RNA worlds			08-MBC-RNAW-152-m01			
Module coordinator		Module offered by				
holder	of the C	Chair of Biochemistry		Chair of Biochemist	ry	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
state of	resear		lexes, their structures		pth exploration of the current ell as the theoretical principles of	
Intende	ed learr	ning outcomes				
learned	l to nev		e to situate new resea		able to transfer what they have the context of existing knowledge	
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V (1) + S Module		t in: German or English				
		e ssment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
 a) written examination (30 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes) or e) presentation (20 to 45 minutes) Students will be informed about the method, length and scope of the assessment prior to the course. 						
		ssessment: German and/ blaces				
	Allocation of places					
Additio	nal info	ormation				
Worklo	ad					
150 h						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master's degree (1 major) Biochemistry (2015) Master's degree (1 major) Biomedicine (2015) Master's degree (1 major) Biochemistry (2017) Master's degree (1 major) Biomedicine (2018) Master's degree (1 major) Biochemistry (2019)						

Module title			Abbreviation			
Life cycle of proteins					08-MBC-LCP-152-m01	
Module coordinator		Module offered by				
holder o	of the C	Chair of Biochemistry		Chair of Biochemist	ry	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	numei	rical grade				
Duratio	n	Module level	Other prerequisites			
1 semes	ster	graduate				
Content	ts					
		omprises a lecture and a rch on the regulation and			pth exploration of the current	
Intende	d learr	ning outcomes				
learned	to nev		e to situate new resea		able to transfer what they have he context of existing knowledge	
Courses	5 (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V (1) + S Module		t in: German or English				
		e ssment (type, scope, langua) le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
 a) written examination (30 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes) or e) presentation (20 to 45 minutes) Students will be informed about the method, length and scope of the assessment prior to the course. 						
Allocati		ssessment: German and _/ J laces				
	•					
Additio	nal info	ormation				
Workloa	ad					
150 h						
Teachin	Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master's degree (1 major) Biochemistry (2015)						
Master's degree (1 major) Biomedicine (2015)						
	Master's degree (1 major) Biochemistry (2017)					
	Master's degree (1 major) Biomedicine (2018)					
master	Master's degree (1 major) Biochemistry (2019)					

Module	e title				Abbreviation
Structu	ire and	function of RNA-protein	complexes		08-MBC-RNP-152-m01
Module	e coord	inator		Module offered by	y
holder	ofthe	Chair of Biochemistry		Chair of Biochem	istry
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
10	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
		actical experiments, stu ion of RNA-protein comp		age with scientific	methods and lab techniques for
Intend	ed lear	ning outcomes			
					explain and critically reflect upon indings in a written report.
Course	S (type, r	number of weekly contact hours,	language — if other than Ger	rman)	
Ü (6)					
	_	t in: German or English			
		sessment (type, scope, langu le for bonus)	age — if other than German, o	examination offered — if	not every semester, information on whether
		o pages) or		、 、	
		nation of one candidate nation in groups of up to		•	idate) or
		on (20 to 40 minutes)		, minutes per cund	
Langua	ige of a	ssessment: German and			
		ffered: Once a year, win	ter semester		
Allocat	ion of _l	olaces			
Additio	nal inf	ormation			
Worklo	ad				
300 h					
Teachi	ng cycl	e			
Referre	d to in	LPO I (examination regulatio	ns for teaching-degree progra	mmes)	
Module	e appea	ars in			
Master	's degr	ee (1 major) Biochemisti	y (2015)		
Master	0	ee (1 major) Biochemisti	y (2017)		
		ee (1 major) Biochemisti			

Module	title				Abbreviation	
Protein	quality	y control			08-MBC-PQK-152-m01	
Module	coord	inator		Module offered by		
holder	of the (Chair of Biochemistry		Chair of Biochemist	try	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
10	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
		actical experiments, stud otein degradation in euka		age with scientific m	nethods and lab techniques in	
Intende	ed learr	ning outcomes				
		ter the techniques used i ts they have performed a	-	-	xplain and critically reflect upon dings in a written report.	
Course	S (type, n	umber of weekly contact hours, la	anguage — if other than Ger	man)		
Ü (6)						
Module	taugh	t in: German or English				
		s essment (type, scope, langua; le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
b) oral (c) oral (d) preso Langua	examin examin entatio ge of a	o pages) or ation of one candidate e ation in groups of up to 3 n (20 to 40 minutes) ssessment: German and/ ffered: Once a year, sumi	candidates (15 to 3c		late) or	
Allocat	ion of p	olaces				
Additio	nal info	ormation				
Worklo	ad					
300 h						
Teachir	ng cycl	e				
Referre	d to in	LPOI (examination regulations	s for teaching-degree progra	mmes)		
Module	appea	in				
	-	ee (1 major) Biochemistry				
	-	ee (1 major) Biochemistry				
Master	s degre	ee (1 major) Biochemistry	(2019)			

Module title					Abbreviation	
Macromolecular Crystallography 08-MBC-MK-152-m01						
Module	e coord	inator		Module offered by		
holder	of the (Chair of Biochemistry		Chair of Biochemist	try	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
10	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
This module comprises a lecture, exercises and a lab course. The lecture will discuss the following topics: bio- physical characterisation of protein samples prior to crystallisation; manual and high-throughput methods for protein crystallisation; X-ray generators and synchrotrons, properties of X-rays; data collection using different de- tector systems; symmetry properties of molecules, point groups and space groups; the phase problem and so- lution of that problem using multiple isomorphous replacement, anomalous diffraction and molecular replace- ment; improvement of experimental phases by solvent flattening and molecular averaging; manual and automa- ted model building; refinement procedures and analysis of the experimentally determined structures. The exer- cises will give students the opportunity to explore the topics discussed in the lecture in more depth. In the lab course, students will carry out all of the steps involved in protein structure analysis that were discussed in the lecture. They will use lysozyme as an example enzyme and will carry out the following steps autonomously: cry- stallisation of the purified protein, data collection on the Institute's diffractometer, solution of the phase pro- blem using the anomalous signal from intrinsic sulphur atoms, model building, structure refinement, analysis of the refined structure. Intended learning outcomes Students will develop a thorough knowledge of modern macromolecular crystallographic methods. The lecture will provide an in-depth exploration of those methods, the exercise will give students the opportunity to enga- ge with the most intellectually challenging aspects in more detail, and the lab course will give them practice in using the methods. At the end of the module, students will be able to perform crystallographic structure analy- ses for their Master's or doctoral thesis.						
Course V (2) +			s, language — if other than Ger	rman)		
Module	e taugh	t in: German or English				
		sessment (type, scope, lang le for bonus)	guage — if other than German,	examination offered — if no	t every semester, informati	ion on whether
b) log (c) oral d) oral e) pres Langua Assess	a) written examination (approx. 45 to 90 minutes) or b) log (20 to 30 pages) or c) oral examination of one candidate each (20 to 30 minutes) or d) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate) or e) presentation (20 to 40 minutes) Language of assessment: German and/or English Assessment offered: Once a year, summer semester					
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
300 h						
Teachi	ng cycl	e				
Master's wi	ith 1 majo	r Biochemistry (2017)		g • generated 19-Apr-2025 • e Master (120 ECTS) Biochemie		page 16 / 192

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) Biochemistry (2015) Master's degree (1 major) Biochemistry (2017) Master's degree (1 major) Biochemistry (2019)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 17 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Module title				Abbreviation		
Mass-	Mass-Spectrometry and Proteomics 08-MBC-MSP-152-m01					
Modul	e coord	inator		Module offered by		
holder	of the (Chair of Biochemistry		Chair of Biochemist	try	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Durati	on	Module level	Other prerequisites			
1 seme	ester	graduate				
Conter	nts					
This module comprises a lecture, a seminar and a lab course. The lecture discusses the fundamental princip- les of the mass spectrometry of biomolecules. Topics to be covered in the lecture include ESI and MALDI ioni- sation techniques as well as the operating principles of TOF, Orbitrap and other mass analysers. The lecture al- so provides an introduction to CID and ETD fragmentation techniques, peptide and protein separation methods as well as the analysis of mass spectrometric data (protein databases, FDR, GO terms, etc.). It gives an overview of quantitative proteomics with a special focus on different stable isotope quantification methods (e.g. SILAC, N15 labelling, iTRAQ) and provides an insight into the mass spectrometric analysis of post-translational modi- fications. The seminar covers the fundamental principles of the analysis of mass spectrometric data. It introdu- ces students to different software packages and gives them the opportunity to independently develop solutions to a range of problems. In the lab course, students will use affinity purification to isolate a protein complex from yeast. They will then use 1D-SDS-PAGE to separate that complex and will proteolytically cleave it in the gel. After- wards, students will use nano-LC-MS/MS to analyse the peptides thus obtained and will conduct a data analysis to identify specific interaction partners and post-translational modifications. Intended learning outcomes Students have learned the theoretical foundations of mass spectrometry protein and proteomic analysis. They have learned how to use proteomic data analysis software tools. Students have become proficient in the affini- ty purification of protein complexes and have learned the steps involved in the preparation of samples for mass spectrometry protein analysis, e.g. SDS-PAGE and in-gel digestion. They have gained an insight into how to ope- rate a nanoHPLC-coupled mass spectrometer. Courses (type, number of weekly contact hours, language – if other than German) V (2) + S (1) + P (2) Module						
		sessment (type, scope, lang	uage — if other than German,	examination offered — if no	ot every semester, informati	ion on whether
a) writt b) log c) oral d) oral e) pres Langua	 module is creditable for bonus) a) written examination (approx. 45 to 90 minutes) or b) log (20 to 30 pages) or c) oral examination of one candidate each (20 to 30 minutes) or d) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate) or e) presentation (20 to 40 minutes) Language of assessment: German and/or English Assessment offered: Once a year, winter semester 					
Alloca	tion of p	olaces				
Biochemie (Biochemistry), Master's: 6 places. Places will be allocated according to the number of subject seme- sters. Among applicants with the same number of subject semesters, places will be allocated by lot. A waiting list will be maintained and places re-allocated by lot as they become available.						
Additio	Additional information					
Worklo	oad					
150 h						
Master's w	vith 1 majo	r Biochemistry (2017)		g • generated 19-Apr-2025 • e Master (120 ECTS) Biochemie	-	page 18 / 192

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) Biochemistry (2015) Master's degree (1 major) Biochemistry (2017)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 19 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Module title				Abbreviation	
Drug design 08-MCM3-152-m01					08-MCM3-152-m01
Module	Module coordinator M				
lecturer mistry)	rs Phar	mazeutische Chemie (Ph	armaceutical Che-	Institute of Pharma	cy and Food Chemistry
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	graduate			
Conten	ts				
Fundamentals: drug targets (types and classification), target validation, effect mechanisms, protein-ligand in- teractions, lead finding; lead optimisation. Experimental methods: bioassays, HTS, combinatorial chemistry, na- turally occurring substances. Theoretical methods: molecular modelling, structure-based drug design, pharma- cophore models, docking, virtual screening, simulation methods, de novo design. Ligand-based drug design. QSAR. Predictions of pharmacokinetic and toxicological components (ADME). Case examples, prodrug strate- gies, bioisosterism, SAR. Intended learning outcomes					
		ter the theoretical and ex	nerimental methods	and aspects of drug	design
		umber of weekly contact hours, la	-		
S (2) + l		,			
Module	taugh	t in: German or English			
		e ssment (type, scope, langua le for bonus)	ge — if other than German,	examination offered — if no	t every semester, information on whether
		vith discussion (approx. ssessment: German and)			
Allocati	ion of p	olaces			
ted accordination dicination ber of s me Bioo plicants	20 places. 4 places for students of the Master's degree programme Chemie (Chemistry): Places will be alloca- ted according to the same number of subject semesters; students who have chosen Medizinische Chemie (Me- dicinal Chemistry) as their focus will be given preferential consideration; among applicants with the same num- ber of subject semesters, places will be allocated by lot.; 6 places for students of the Master's degree program- me Biochemie (Biochemistry): Places will be allocated according to the number of subject semesters; among ap- plicants with the same number of subject semesters, places will be allocated by lot; a waiting list will be maintai- ned and places re-allocated by lot as they become available.				
Additio	nal inf	ormation			
Worklo	ad				
150 h					
Teachir	ıg cycl	9			
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
		•			
Module Mactor			(2015)		
	-	ee (1 major) Biochemistry ee (1 major) Chemistry (20			
		ee (1 major) Biochemistry			

Master's with 1 major Biochemistry (2017)

Module title					Abbreviation				
Biophy	Biophysics of Proteins 03-MBC-PBP-172-m01								
Module	coord	inator		Module offered by					
Chair of ne	Rudol	f Virchow Center for Exp	erimental Biomedici-	i- Faculty of Medicine					
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)					
5	nume	rical grade							
Duratio	n	Module level	Other prerequisites						
1 semes	ster	graduate							
Conten	ts								
zation of lenges the bas pe. Amo and ligh selected	The module "Protein Biophysics" will provide participants with detailed insights into the biophysical characteri- zation of proteins. We will deal both with soluble model proteins (Dr. Sonja Lorenz) and with the particular chal- lenges of membrane protein research (Dr. Sebastian Geibel). The module contains a lecture part that deals with the basics of different biophysical methods to characterize protein stability, oligomerization behavior and sha- pe. Among others, small angle X-ray scattering (SAXS), circular dichroism (CD) spectroscopy, fluorimetry (DSC) and light scattering (DLS + MALS) are discussed. The lectures will be complemented by short presentations on selected topics. In the practical part of the course, the techniques discussed will be applied using self-isolated proteins, data will be analysed with computer support and interpreted scientifically.								
Intende	d learr	ning outcomes							
cularitie method	The participants get an overview of the manifold biophysical methods for characterizing proteins and the parti- cularities of working with membrane proteins. The acquired knowledge ranges from the theoretical basics of the methods to their practical application to the scientific analysis and interpretation of the data and should give a realistic impression of the researcher's life.								
Course	5 (type, n	umber of weekly contact hours	language — if other than Ger	rman)					
V (2) + 9 Module		P (2) t in: English							
		e essment (type, scope, langu le for bonus)	age — if other than German,	examination offered — if no	t every semester, informati	ion on whether			
b) log (2 c) oral e d) oral e e) prese Langua	 a) written examination (approx. 45 to 90 minutes) or b) log (20 to 30 pages) or c) oral examination of one candidate each (20 to 30 minutes) or d) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate) or e) presentation (20 to 40 minutes) Language of assessment: German and/or English 								
Allocati	ion of p	olaces							
		ochemistry) Master's: 6	3 places.						
Additio	nal inf	ormation							
			_						
Worklo	ad								
150 h									
Teachir	ig cycl	9							
Referre	d to in	LPOI (examination regulatio	ns for teaching-degree progra	mmes)					
		•							
Module									
	-	ee (1 major) Biochemist ee (1 major) Biochemist	• •						
Master's wi	th 1 major	Biochemistry (2017)	-	g • generated 19-Apr-2025 • e Master (120 ECTS) Biochemie	-	page 21 / 192			

Module	e title				Abbreviation	
Electro	on micro	oscopy and image proces	sing in structural bio	logy	08-MBC-EMV-172-m01	
Module coordinator				Module offered by		
				Chair of Biochemis	try	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade		-		
Duratio	on	Module level	Other prerequisites			
1 seme	ester	graduate				
Conten	nts					
sample ment a ta. The sificati on are graphy nar par The stu ons. So dies wi develo further Intendo	e prepa lignme focus i on and discuss Finally rt of the udents ome of ill be pr p a criti deeper ed lear rticipar	ration for electron micros nt and data acquisition. s on the principles of sin three-dimensional image sed. The learned principle y, micro electron diffracti module some aspects o will read these case stud the questions will be add esented by one student cal understanding of the ned by arithmetic exercis ning outcomes tts will learn the theoretic	copy in structural bio The second part of the gle image analysis. The ereconstruction. DeN es are then applied to on is presented as an f the lecture are deep ies in advance. In this lressed independentl each. All case studies advantages and limi es.	ology will be discuss e lecture concentrate his includes the alig ovo and iterative me o the special cases of alternative to X-ray ened on the basis o s work they are guide y in a written homew will be explained in tations of the methor microscopy and ima	equently, different methods of ed as well as strategies for instru es on the processing of image da ment of image data, their clas- ethods of 3D image reconstructi- of 2D crystal analysis and tomo- structure analysis. In the semi- f case studies from the literature ed through a catalogue of questi- work in advance. Most case stu- n a discussion. The participants od. Some selected topics will be	
elucida unders Course	ation. T stand, c es (type, r		deepened in a practi y evaluate primary lit	cal course. In the en erature on this meth	, which are essential for structure d, all participants will be able to nod.	
V (1) + Module		t in: German or English				
Metho	d of ass		ge — if other than German, e	examination offered — if no	ot every semester, information on whether	
b) log (c) oral d) oral e) pres Langua	(20 to 3 examin examir entatio	mination (approx. 45 to 9 o pages) or ation of one candidate e nation in groups of up to n (20 to 40 minutes) ssessment: German and places	ach (20 to 30 minute: 3 candidates (15 to 30	-	date) or	
Additio	onal inf	ormation				
Worklo	bad					
150 h						
Teachi	ng cycl	e				
Master's w	vith 1 majo	r Biochemistry (2017)	-	• generated 19-Apr-2025 • e		
			data record	Master (120 ECTS) Biochemi	e - 2017	

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) Biomedicine (2015) Master's degree (1 major) Biochemistry (2017) Master's degree (1 major) Biomedicine (2018) Master's degree (1 major) Biochemistry (2019)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 23 / 192
	data record Master (120 ECTS) Biochemie - 2017	P-3 7 - 7 -

Module title				Abbreviation	
Practic	al cour	se of electron microscop	08-MBC-EMP-172-m01		
Module coordinator Module offered by				·	
holder of the Chair of Biochemistry				Chair of Biochemistry	
ECTS	Meth	od of grading	Only after succ. con	nly after succ. compl. of module(s)	
10	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	1 semester graduate				
Contents					
					" consists of an electron micros-

copy part and an image processing part. In the electron microscopy part the participants get to know the different elements of the electron microscope and how they work. Aspects of alignment, focusing and data acquisition will be developed. The participants will then use different preparation methods for electron microscopy (grid preparation, negative contrast and vitrification). The samples are then imaged in an electron microscope. Sample and data optimization are developed and data sets are created for further image processing. In the image processing part, the participants are first introduced to general aspects of computer operation under Linux (basic Linux commands, basic shell scripting). On this basis, the participants determine the structure of a protein complex from a real test data set. They learn step by step how to select good images, how to correct data for imagedependent aberrations and how to normalize, mask and filter image data. With the data prepared in this way, the participants will determine the characteristic views of the complex (2D classification) and combine these with various methods to form a DeNovo model. This model is then refined in an iterative process. In the second part of the image processing practical course the participants apply what they have learned to their own data. At the end of the practical course the participants present the different working steps and exchange experiences. The practical part of the electron microscopy practical course and the image processing practical course on test data will be summarized in a protocol. The results on the own data are presented in the form of a scientific publication, which requires a corresponding literature work and the creation of more complex images.

Intended learning outcomes

The participants will be taught the skills to prepare an already purified biological complex for structure determination with the help of electron microscopy and to independently determine its structure de novo from electron microscopic data. The participants will acquire a practical understanding for the data acquisition at the electron microscope and will be able to plan and carry out a corresponding experiment with technical support in the future. The participants will further develop the following key qualifications in the course: Computer skills (insights into Linux), team skills (working in teams of 2-3 students with varying composition), communication skills (oral and written presentation of results).

Courses (type, number of weekly contact hours, language – if other than German)

P (8)

Module taught in: German or English

Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus)

a) log (20 to 30 pages) or

b) oral examination of one candidate each (20 to 30 minutes) or

c) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate) or

d) presentation (20 to 40 minutes)

Language of assessment: German and/or English

Assessment offered: Once a year, summer semester

Allocation of places

Additional information

--

Master's with 1 major Biochemistry (2017)

Workload

300 h

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

--

Module appears in

Master's degree (1 major) Biochemistry (2017) Master's degree (1 major) Biochemistry (2019)

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	data record Master (120 ECTS) Biochemie - 2017	

Module title				Abbreviation	
Functio	nal Pro	teomics: Deciphering Pr	otein Worlds		08-MBC-FPV-232-m01
Module	coord	inator		Module offered by	
holder	of the C	Chair of Biochemistry II		Chair of Biochemist	try
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	graduate			
Conten	ts				
well as nizatior	the the n, dyna or the f	eoretical basis of state-of mics and modulation of t	-the-art methods of b the proteome of euka	iomolecular mass sp ryotic cells. Emphas	Id of functional proteomics as pectrometry for the study of orga- is is placed on quantitative stra- , and signaling and proteostasis
Intende	ed learr	ning outcomes			
vantage	es and		mass spectrometry i	methods, know a wid	ents taught. They can explain ad- de range of applications of the
Courses	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (1) + S Module	.,	t in: German or English			
Method	l of ass	essment (type, scope, langua	ge — if other than German, e	examination offered — if no	t every semester, information on whether
		le for bonus)			
b) oral (c) oral (d) prese Student Langua	examin examin entatio ts will l ge of a	nination (30 to 60 minute ation of one candidate e ation in groups of up to 3 n (20 to 45 minutes) pe informed about the me ssessment: German and/ ffered: Once a year, winte	ach (30 to 60 minute candidates (30 to 60 ethod, length and sco for English	s) or o minutes) or	nt prior to the course.
Allocati	ion of p	olaces			
Additio	nal info	ormation			
Worklo	ad				
150 h					
Teachir	ng cycl	e			
Teachir	ng cycle	e: Once a year, winter sen	nester		
Referre	d to in	LPO I (examination regulations	for teaching-degree progra	mmes)	
Module	appea	in and a second s			
	•	ee (1 major) Biochemistry			
	-	ee (1 major) Biochemistry			
master	s uegre	ee (1 major) Biochemistry	(2019)		

Modul	e title				Abbreviation		
The Fu	nctiona	l Proteome: Organizatio	on, Modulation and Dy	vnamics	08-MBC-FPP-232-m	01	
Modul	e coord	inator		Module offered by			
holder	ofthe	Chair of Biochemistry II		Chair of Biochemis	try		
ECTS Method of grading Only after succ. co			pl. of module(s)				
10	nume	rical grade					
Durati	on	Module level	Other prerequisites				
1 semester graduate Students are highly recommended to complete module o8-MBC-Fl the same semester. the same semester.			ABC-FPV in				
of the :	odule e study o	nables in-depth familiari f the proteome as well a	s its organization, dyn	amics and modulat	ion within the frame	work of prac-	
		ents. The focus is on fund ng bioinformatic data an				ometric me-	
Intend	ed lear	ning outcomes					
critical	ly refle	iting in the module, stud ct on the experiments ca ite manner.					
Course	es (type, r	number of weekly contact hours,	language — if other than Ger	man)			
Ü (6) Modul	e taugh	t in: German or English					
		s essment (type, scope, langu ile for bonus)	age — if other than German, e	examination offered — if n	ot every semester, informat	ion on whether	
c) oral d) pres Studer Langua	examin sentationts will age of a	nation of one candidate of ation in groups of up to on (20 to 45 minutes) be informed about the m ssessment: German and ffered: Once a year, wint	3 candidates (approx. nethod, length and sco l/or English	. 30 to 60 minutes) (e.	
Alloca	tion of _l	olaces					
the nu	mber of	mber of applications ex subject semesters. Amo ot. A waiting list will be r	ong applicants with th	e same number of s	ubject semesters, pl	aces will be	
Additio	onal inf	ormation					
-	oad						
Worklo							
300 h							
300 h Teachi	ng cycl						
300 h Teachi Teachi	ng cycl ng cycl	e: Once a year, winter se					
300 h Teachi Teachi	ng cycl ng cycl			mmes)			
300 h Teachi Teachi	ng cycl ng cycl	e: Once a year, winter se		mmes)			
300 h Teachi Teachi Referre Modul	ng cycl ng cycl ed to in e appea	e: Once a year, winter se LPO I (examination regulation	ns for teaching-degree progra	mmes)			
300 h Teachi Teachi Referro Modul Master Master	ng cycl ng cycl ed to in e appea r's degr r's degr	e: Once a year, winter se	y (2015) y (2017)	mmes)			

Module title Ab					Abbreviation	
Biophy	sics an	d Molecular Biotechnol	ogy		07-MS2BT-152-m01	
Module	e coord	inator		Module offered by		
holder	of the (Chair of Biotechnology a	nd Biophysics	Faculty of Biology		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
10	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts	0				
ture dis moves single r physiol dynami	on to d nolecu ogy, io		of thermodynamics, ki nods that facilitate the nanipulation and diele	netics and molecular investigation of ind ectric spectroscopy o	r interactions. The co ividual cells down to of cells, biomembran	ourse then the level of es, electro-
Intende	ed lear	ning outcomes				
enable where r	them t necess	have acquired a knowle o independently review ary, will be able to indep	relevant literature. In pendently acquaint the	addition, they will ha emselves with - biop	ave become acquain	ted with - or,
		umber of weekly contact hours	, language — if other than Ger	rman)		
V (2) + 1 Module		t in: English				
		essment (type, scope, langu le for bonus)	age — if other than German,	examination offered — if no	t every semester, informati	ion on whether
c) oral e d) oral Studen	examin examir ts will	mination (30 to 60 minu ation of one candidate lation in groups of up to be informed about the n ssessment: German and	each (30 to 60 minute 3 candidates (30 to 6 nethod, length and sc	s) or o minutes)		e.
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
300 h						
Teachir	ng cycl	e				
	0 . 7	-				
Referre	d to in	LPO I (examination regulatio	ns for teaching-degree progra	mmes)		
Module						
Master's degree (1 major) Biochemistry (2015) Master's degree (1 major) Biology (2015) Master's degree (1 major) FOKUS Life Sciences (2015) Master's degree (1 major) Biosciences (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Master's degree (1 major) Biosciences (2017)						
Master's wi	th 1 majo	r Biochemistry (2017)		• generated 19-Apr-2025 • e Master (120 ECTS) Biochemie	-	page 28 / 192

Julius-Maximilians-UNIVERSITÄT WÜRZBURG

Master's degree (1 major) Biochemistry (2017) Master's degree (1 major) Biosciences (2018) Master's degree (1 major) Biochemistry (2019) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Biosciences (2021) exchange program Biosciences (2022) Master's degree (1 major) Biosciences (2023) Master's degree (1 major) Biosciences (2024) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Master's degree (1 major) FOKUS Life Sciences (2025)

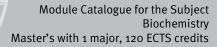
Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 29 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Module title					Abbreviation		
Literatu	ure sen	ninar 1			08-MBC-LIT1-152-m01		
Module	e coord	inator		Module offered by			
chairperson of examination committee mistry)			Biochemie (Bioche-	Chair of Biochemist	try		
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)			
5	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ts						
present sions o	tations f the re	on those publications to	their classmates. Th tact the module coor	ose presentations w	in the life sciences and deliver ill be followed by critical discus- to find out if you can use this mo-		
Intende	ed lear	ning outcomes					
	d of the				piochemistry-related literature in and discussion of scientific in-		
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)			
S (2) Module	e taugh	t in: German or English					
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether		
		20 to 40 minutes) ssessment: German and,	/or English				
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
150 h							
Teachir	ng cycl	e					
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)			
Module	appea	ars in					
	-	ee (1 major) Biochemistry					
	0	ee (1 major) Biochemistry	· · · ·				
Master	Master's degree (1 major) Biochemistry (2019)						



Module title Abbreviation				Abbreviation		
Single (Cell Bio	blogy			03-98-SCB-192-mo	1
Module	coord	inator		Module offered by		
Helmho burg	ltz Inst	itute of RNA-based Infe	tion Research Würz-	Faculty of Medicine		
ECTS	Metho	od of grading	Only after succ. compl. of module(s)			
5	numei	rical grade				
Duratio	n	Module level	Other prerequisites			
1 semes	ster	graduate				
Content	ts					
an intro gle cell Practica	ductio biolog al comp	l Biology course is at the n of the most recent tecl y across the medical fiel ponents will allow the st	nnologies for single co d (cancer, immunolog	ell analysis and an ov gy, cardiovascular dis	verview of the applic seases, and infectio	ation of sin- us diseases).
		ning outcomes				
apply b	asic pr	amiliar with fundamenta ocedures to analyze sing s for medical diagnostic	gle cell data sets. The	y recognize the signi		,
Courses	5 (type, n	umber of weekly contact hours,	language — if other than Ger	rman)		
V (1,5) + Module		.) t in: English				
		essment (type, scope, langua	age — if other than German, e	examination offered — if no	t every semester, informati	on on whether
		le for bonus)				
	ge of a	nation (approx. 60 minut ssessment: English bonus	tes)			
Allocati	on of p	olaces				
M.Sc.Bi M.Sc. B M.Sc. B	omed: iochen iowis:	15 1: 15				
Additio	nal info	ormation				
Workloa	ad					
150 h						
Teachin	ig cycl	9				
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)		
Module	appea	rs in				
Master' Master' Master' exchang Master'	s degre s degre s degre s degre ge prog s degre	ee (1 major) Biochemistr ee (1 major) Biomedicine ee (1 major) Biosciences ee (1 major) Biosciences ee (1 major) Biosciences gram Biosciences (2022) ee (1 major) Biosciences Biochemistry (2017)	(2018) (2018) y (2019) (2021) (2023)	• generated 19-Apr-2025 • e:	xam. reg.	page 31 / 192
	,51		-	Master (120 ECTS) Biochemie	-	





Master's degree (1 major) Biosciences (2024)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 32 / 192
	data record Master (120 ECTS) Biochemie - 2017	1



Subfield - Molecular and Medical Cell Biology

(20 ECTS credits)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 33 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Module title					Abbreviation
Human	geneti	cs			03-MS2HG-152-m01
Module	e coord	inator		Module offered by	
holder	of the (Chair of of Human Geneti	cs	Faculty of Medicine	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
10	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
2 seme	ester	graduate			
Conten	Its				
This m	odule w	vill discuss current topics	in human genetics.		
Intend	ed lear	ning outcomes			
Studen detail.	its have	e developed the ability to	understand relevant	questions in humar	n genetics and to discuss these in
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
V (2) + Module		t in: German or English			
			ge — if other than German, e	examination offered — if no	ot every semester, information on whether
		le for bonus)	•		
		mination (approx. 45 to 9 nation of one candidate e		s) or	
		ation in groups of up to g			late)
		ssessment: German and,	/or English		
Allocat	ion of p	olaces			
Additio	onal inf	ormation			
Worklo	ad				
300 h					
Teachi	ng cycl	e			
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	e appea	ars in			
	-	ee (1 major) Biochemistry	-		
	-	ee (1 major) Biochemistry			
Master's degree (1 major) Biochemistry (2019)					

Module titl	e		-	Abbreviation	
Clinical-ana	alytical Chemistry			08-PH-KAC-152-m01	
Module coo	ordinator		Module offered by		
lecturer of l	ecture "Klinisch-analytisch	ne Chemie" (Clinical	-	cy and Food Chemistry	
and Analytical Chemistry)		-			
	thod of grading	Only after succ. con	npl. of module(s)		
	nerical grade				
Duration	Module level	Other prerequisites	i		
1 semester	graduate				
Contents					
This modul	e discusses advanced top	ics in clinical analytica	al chemistry.		
Intended le	arning outcomes				
Students ha	ave developed an advance	ed knowledge of molec	cular biology.		
Courses (typ	e, number of weekly contact hours	, language — if other than Ge	rman)		
V (3)					
Method of	assessment (type, scope, langu	uage — if other than German,	examination offered — if no	t every semester, information on whether	
module is cred	table for bonus)				
	mination (approx. 120 min				
	f assessment: German and	d/or English			
Allocation	of places				
Additional	information				
Workload					
150 h					
Teaching cy	/cle				
Referred to	in LPO I (examination regulation	ons for teaching-degree progra	ammes)		
Module app	ears in				
	gree (1 major) Biochemist	ry (2015)			
	gree (1 major) Chemistry (
Master's te	aching degree Gymnasium	n MINT Teacher Educat	ion PLUS, Elite Netw	ork Bavaria (ENB) (2016)	
••	tary course MINT Teacher		Network Bavaria (EN	B) (2016)	
Master's degree (1 major) Biochemistry (2017)					
Master's degree (1 major) Chemistry (2018)					
Master's degree (1 major) Biochemistry (2019)					
	aching degree Gymnasium				
	tary course MINT Teacher		Network Bavaria (EN	В) (2020)	
	gree (1 major) Chemistry (aching degree Gymnasium		ion PLUS Elito Notw	ork Bayaria (FNB) (2025)	
	tary course MINT Teacher				

Module title	!			Abbreviation		
Practical co	urse of clinical-analytical (Chemistry		08-PH-KACP-152-m01		
Module coo	rdinator		Module offered by	<u> </u>		
	ecture "Klinisch-analytisch	o Chomio" (Clinical		cy and Food Chemistry		
	cal Chemistry)	e chenne (chincat		cy and rood chemistry		
ECTS Met	hod of grading	Only after succ. cor	ompl. of module(s)			
5 (no) successfully completed					
Duration	Module level	Other prerequisites				
1 semester	undergraduate					
Contents		• •				
This module methods.	covers practical topics in	clinical chemistry and	d clinical diagnostics	s as well as the related analytical		
Intended le	arning outcomes					
		e of clinical analytical	chemistry and are a	ble to apply it to practical experi-		
Courses (typ	e, number of weekly contact hours,	language — if other than Ge	rman)			
P (5)						
Method of a module is credi		age — if other than German,	examination offered — if no	ot every semester, information on whether		
pages each	Nachtestate (pre and post- and assessment of praction assessment: German and	cal performance (2 to		minutes each, log approx. 5 to 10 ions)		
Allocation of	f places					
Additional i	nformation					
Workload						
150 h		-				
Teaching cy	cle					
Referred to	in LPO I (examination regulation	s for teaching-degree progra	ammes)			
Module app	ears in					
Master's de	gree (1 major) Biochemistry	y (2015)				
	gree (1 major) Chemistry (2					
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)						
••	Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Master's degree (1 major) Biochemistry (2017)					
	gree (1 major) Biochemistry (2					
	gree (1 major) Biochemistry (2					
	iching degree Gymnasium	-	ion PLUS, Elite Netw	ork Bavaria (ENB) (2020)		
	ary course MINT Teacher E					

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 36 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Module	title				Abbreviation
Microbiology 1 07-MS2M1-152-m01					07-MS2M1-152-m01
Module coordinator Module offered by					
holder	of the C	hair of Microbiology		Faculty of Biology	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
10	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
al path	ogenici				adherence and invasion, bacteri- nd pathogen interference, current
Intende	ed learn	ning outcomes			
		are able to understand fu infectious diseases.	ndamental theories o	of molecular microbi	ology and infection biology,
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (2) + 2	S (1)				
		e essment (type, scope, langua; le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
b) oral (c) oral (examin examin	nination (approx. 45 to 9 ation of one candidate e ation in groups of up to 3 ssessment: German and/	ach (20 to 30 minute candidates (15 to 30		late)
Allocat	ion of p	olaces			
sters. A	monga		number of subject s	emesters, places wil	ng to the number of subject seme- l be allocated by lot. A waiting
Additio	nal inf	ormation			
Worklo	ad				
300 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
	-				
Module					
		ee (1 major) Biochemistry	· .		
Master'	s degre	ee (1 major) Biochemistry	(2017)		

Module	title				Abbreviation
Microbiology 2 07-MS2M2-152-m01					07-MS2M2-152-m01
Module coordinator Module offered by					
holder	of the O	Chair of Microbiology		Faculty of Biology	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
10	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	graduate			
Conten	ts				
ted pro	karyoti				will be presented using selec- ent research methods in infecti-
Intende	ed learr	ning outcomes			
		e gained fundamental kno infectious diseases.	owledge in infection b	piology and pathoge	nicity research and the mecha-
Courses	5 (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (2) + 9	S (1)				
		s essment (type, scope, langua ₎ le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
b) oral e c) oral e	examin examin	nination (approx. 45 to 9 ation of one candidate e ation in groups of up to 3 ssessment: German and/	ach (20 to 30 minute candidates (15 to 30		late)
Allocati	ion of p	olaces			
sters. A	monga		number of subject s	emesters, places wil	ng to the number of subject seme- l be allocated by lot. A waiting
Additio	nal inf	ormation			
Worklo	ad				
300 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	appea	irs in			
	-	ee (1 major) Biochemistry	-		
Master'	s degre	ee (1 major) Biochemistry	(2017)		

Module title Abbreviation					Abbreviation
Infection Biology for Biochemistry Students 07-N				07-MS2INF-BC-191-m01	
Modul	e coord	inator		Module offered by	1
holder	ofthe	Chair of Microbiology		Faculty of Biology	
ECTS	Meth	od of grading	Only after succ. con	pl. of module(s)	
5	nume	rical grade			
Durati	on	Module level	Other prerequisites		
1 seme	ester	graduate	May not be combine	ed with 07-MS2M1.	
Conter	nts				
al path	ogenic				adherence and invasion, bacteri- nd pathogen interference, current
Intend	ed lear	ning outcomes			
		are able to understand fu infectious diseases.	indamental theories (of molecular microbi	iology and infection biology,
Course	es (type, r	number of weekly contact hours, I	anguage — if other than Gei	man)	
V (2) Modul	e taugh	t in: German and/or Engl	ish		
Metho	d of ass	Sessment (type, scope, langua	ge — if other than German,	examination offered — if no	ot every semester, information on whether
module i	s creditab	ole for bonus)			
 a) written examination (30 to 60 minutes; also multiple choice) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (30 to 60 minutes) Students will be informed about the method, length and scope of the assessment prior to the course. Language of assessment: German and/or English 					
Allocat	tion of _l	places			
Additio	onal inf	ormation			
Worklo	ad				
150 h					
Teachi	ng cycl	e			
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)				
Modul	e appea	ars in			
	-	ee (1 major) Biochemistry			
Master	r's degr	ee (1 major) Biochemistry	/ (2019)		

Modul	e title				Abbreviation
Pathogenicity of Microorganisms for Biochemistry Students 07-MS2PA-BC-191-m01					07-MS2PA-BC-191-m01
Modul	e coord	inator		Module offered by	
holder	ofthe	Chair of Microbiology		Faculty of Biology	
ECTS	Meth	od of grading	Only after succ. con	pl. of module(s)	
5	nume	rical grade			
Durati	on	Module level	Other prerequisites		
1 seme	ester	graduate	May not be combine	ed with 07-MS2M2.	
Conter	nts				
ted pro	okaryoti				s will be presented using selec- rent research methods in infecti-
Intend	ed lear	ning outcomes			
		e gained fundamental kn infectious diseases.	owledge in infection	piology and pathoge	enicity research and the mecha-
Course	es (type, r	number of weekly contact hours, I	anguage — if other than Ger	man)	
V (2) Modul	e taugh	t in: German and/or Engl	ish		
Metho	d of ass	sessment (type, scope, langua	ige — if other than German, o	examination offered — if n	ot every semester, information on whether
module i	is creditab	le for bonus)			
c) oral d) oral Studer	examin examin nts will	mination (30 to 60 minut action of one candidate e nation in groups of up to be informed about the m ssessment: German and	ach (30 to 60 minute 3 candidates (30 to 6 ethod, length and sco	s) or o minutes)	ent prior to the course.
Alloca	tion of _l	places			
Additio	onal inf	ormation			
Worklo	oad				
150 h					
Teachi	ing cycl	e			
Referre	ed to in	LPOI (examination regulation	s for teaching-degree progra	mmes)	
Modul	e appea	ars in			
	-	ee (1 major) Biochemistry			
master	i s degr	ee (1 major) Biochemistry	(2019)		

Module title Abbreviation					Abbreviation
Immunology 1 03-MS2IM1-152-m01					03-MS2IM1-152-m01
Module	coord	inator		Module offered by	
holder	of the F	Professorship of Immuno	genetics	Faculty of Medicine	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
10	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	graduate			
Content	ts				
mune-n	nediate		This incorporates con	mmon literature read	ow a deeper understanding of im- lings, presentations and tests on guage.
Intende	d learr	ning outcomes			
		gain a knowledge of fund le to present and discuss		d methods in molec	ular and cellular immunology
Courses	5 (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (1) + S Module		t in: English			
		e ssment (type, scope, langua) le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
 a) written examination (approx. 45 to 90 minutes) or b) log (20 to 30 pages) or c) oral examination of one candidate each (20 to 30 minutes) or d) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate) or e) presentation (20 to 40 minutes) Language of assessment: German and/or English Assessment offered: Once a year, winter semester 					
Allocati	ion of p	olaces			
sters. A	mong a		number of subject se	emesters, places wil	g to the number of subject seme- l be allocated by lot. A waiting
Additio	nal info	ormation			
Worklo	ad				
300 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	appea	rs in			
Master' Master'	Module appears inMaster's degree (1 major) Biochemistry (2015)Master's degree (1 major) Biochemistry (2017)Master's degree (1 major) Biochemistry (2019)exchange program Biosciences (2022)				

Immunology 2 03-MS2IM2-152-mo1 Module coordinator Module offered by holder of the Professorship of Immunogenetics Faculty of Medicine ECTS Method of grading Only after succ. compl. of module(s) 10 numerical grade Duration Module level Other prerequisites 1 semester graduate Contents Recent progress in molecular and cellular immunology. Deeper insights into selected immunology chapters , such as autoimmunity and immune modulation, development of the immune system, immunogenetics, evolution, infection immunology doak chapters and recent original literature. Intended learning outcomes Students are able to understand current problems in immunology and to discuss these in detail. Courses (type, number of weekly contact hours, language – if other than German) V (a) + 5 (a) Module taught in: English					
holder of the Professorship of Immunogenetics Faculty of Medicine ECTS Method of grading Only after succ. compl. of module(s) 10 numerical grade Duration Module level Other prerequisites 1 semester graduate Contents Recent progress in molecular and cellular immunology. Deeper insights into selected immunology chapters , such as autoimmunity and immune modulation, development of the immune system, immunogenetics, evolution, infection immunology, and more. This incorporates common literature readings, presentations and tests on selected immunology book chapters and recent original literature. Intended learning outcomes					
ECTS Method of grading Only after succ. compl. of module(s) 10 numerical grade Duration Module level Other prerequisites 1 semester graduate Contents Recent progress in molecular and cellular immunology. Deeper insights into selected immunology chapters , such as autoimmunity and immune modulation, development of the immune system, immunogenetics, evolution, infection immunology book chapters and recent original literature. Intended learning outcomes Students are able to understand current problems in immunology and to discuss these in detail. Courses (type, number of weekly contact hours, language – if other than German) V (1) + S (2) Module taught in: English Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus) a) written examination (approx. 45 to 90 minutes) or b) log (20 to 30 pages) or c) oral examination in groups of up to 3 candidate each (20 to 30 minutes) or appresentation (20 to 40 minutes) Language of assessment: German and/or English Assessment offered: Once a year, summer semester					
10 numerical grade Duration Module level Other prerequisites 1 semester graduate Contents Recent progress in molecular and cellular immunology. Deeper insights into selected immunology chapters , such as autoimmunity and immune modulation, development of the immune system, immunogenetics, evolution, infection immunology, and more. This incorporates common literature readings, presentations and tests on selected immunology book chapters and recent original literature. Intended learning outcomes Students are able to understand current problems in immunology and to discuss these in detail. Courses (type, number of weekly contact hours, language – if other than German) V (1) + S (2) Module taught in: English Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus a) written examination (approx. 45 to 90 minutes) or b) log (20 to 30 pages) or c) oral examination of one candidate each (20 to 30 minutes) or b) log (20 to 30 pages) or c) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate) or d) oral examination in groups of up to 3 candidates (15 to					
Duration Module level Other prerequisites 1 semester graduate Contents Recent progress in molecular and cellular immunology. Deeper insights into selected immunology chapters , such as autoimmunity and immune modulation, development of the immune system, immunogenetics, evolution, infection immunology, and more. This incorporates common literature readings, presentations and tests on selected immunology book chapters and recent original literature. Intended learning outcomes Students are able to understand current problems in immunology and to discuss these in detail. Courses (type, number of weekly contact hours, language – if other than German) V (1) + S (2) Module taught in: English Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus) a) written examination (approx. 45 to 90 minutes) or b) log (20 to 30 pages) or c) oral examination in groups of up to 3 candidates (15 to 30 minutes) or c) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate) or e) presentation (20 to 40 minutes) Language of assessment: German and/or English Assessment offered: Once a year, summer semester Allocation of places Biochemis (Biochemistry), Master's: 3 places. Places will be alloca					
1 semester graduate Contents Recent progress in molecular and cellular immunology. Deeper insights into selected immunology chapters , such as autoimmunity and immune modulation, development of the immune system, immunogenetics, evolution, infection immunology, and more. This incorporates common literature readings, presentations and tests on selected immunology book chapters and recent original literature. Intended learning outcomes					
Contents Recent progress in molecular and cellular immunology. Deeper insights into selected immunology chapters , such as autoimmunity and immune modulation, development of the immune system, immunogenetics, evolution, infection immunology, and more. This incorporates common literature readings, presentations and tests on selected immunology book chapters and recent original literature. Intended learning outcomes Students are able to understand current problems in immunology and to discuss these in detail. Courses (type, number of weekly contact hours, language – if other than German) V (1) + S (2) Module taught in: English Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus) a) written examination (approx. 45 to 90 minutes) or b) log (20 to 30 pages) or c) or al examination of one candidate each (20 to 30 minutes) or d) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate) or e) presentation (20 to 40 minutes) Language of assessment: German and/or English Assessment offered: Once a year, summer semester Allocation of places Biochemis (Biochemistry), Master's: 3 places. Places will be allocated according to the number of subject seme-					
Recent progress in molecular and cellular immunology. Deeper insights into selected immunology chapters , such as autoimmunity and immune modulation, development of the immune system, immunogenetics, evolution, infection immunology, and more. This incorporates common literature readings, presentations and tests on selected immunology book chapters and recent original literature. Intended learning outcomes Students are able to understand current problems in immunology and to discuss these in detail. Courses (type, number of weekly contact hours, language – if other than German) V (1) + S (2) Module taught in: English Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus) a) written examination (approx. 45 to 90 minutes) or b) log (20 to 30 pages) or c) oral examination of one candidate each (20 to 30 minutes) or d) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate) or e) presentation (20 to 40 minutes) Language of assessment: German and/or English Assessment offered: Once a year, summer semester Allocation of places Biochemie (Biochemistry), Master's: 3 places. Places will be allocated according to the number of subject seme-					
Students are able to understand current problems in immunology and to discuss these in detail. Courses (type, number of weekly contact hours, language – if other than German) V (1) + S (2) Module taught in: English Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus) a) written examination (approx. 45 to 90 minutes) or b) log (20 to 30 pages) or c) oral examination of one candidate each (20 to 30 minutes) or d) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate) or e) presentation (20 to 40 minutes) Language of assessment: German and/or English Assessment offered: Once a year, summer semester Allocation of places Biochemie (Biochemistry), Master's: 3 places. Places will be allocated according to the number of subject seme-					
Courses (type, number of weekly contact hours, language — if other than German) V (1) + S (2) Module taught in: English Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus) a) written examination (approx. 45 to 90 minutes) or b) log (20 to 30 pages) or c) oral examination of one candidate each (20 to 30 minutes) or d) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate) or e) presentation (20 to 40 minutes) Language of assessment: German and/or English Assessment offered: Once a year, summer semester Allocation of places Biochemie (Biochemistry), Master's: 3 places. Places will be allocated according to the number of subject seme-					
V (1) + S (2) Module taught in: English Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus) a) written examination (approx. 45 to 90 minutes) or b) log (20 to 30 pages) or c) oral examination of one candidate each (20 to 30 minutes) or d) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate) or e) presentation (20 to 40 minutes) Language of assessment: German and/or English Assessment offered: Once a year, summer semester Allocation of places Biochemie (Biochemistry), Master's: 3 places. Places will be allocated according to the number of subject seme-					
Module taught in: English Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus) a) written examination (approx. 45 to 90 minutes) or b) log (20 to 30 pages) or c) oral examination of one candidate each (20 to 30 minutes) or d) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate) or e) presentation (20 to 40 minutes) Language of assessment: German and/or English Assessment offered: Once a year, summer semester Allocation of places Biochemie (Biochemistry), Master's: 3 places. Places will be allocated according to the number of subject seme-					
 module is creditable for bonus) a) written examination (approx. 45 to 90 minutes) or b) log (20 to 30 pages) or c) oral examination of one candidate each (20 to 30 minutes) or d) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate) or e) presentation (20 to 40 minutes) Language of assessment: German and/or English Assessment offered: Once a year, summer semester Allocation of places Biochemie (Biochemistry), Master's: 3 places. Places will be allocated according to the number of subject seme-					
 b) log (20 to 30 pages) or c) oral examination of one candidate each (20 to 30 minutes) or d) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate) or e) presentation (20 to 40 minutes) Language of assessment: German and/or English Assessment offered: Once a year, summer semester Allocation of places Biochemie (Biochemistry), Master's: 3 places. Places will be allocated according to the number of subject seme-					
Allocation of places Biochemie (Biochemistry), Master's: 3 places. Places will be allocated according to the number of subject seme-					
Biochemie (Biochemistry), Master's: 3 places. Places will be allocated according to the number of subject seme-					
sters. Among applicants with the same number of subject semesters, places will be allocated by lot. A waiting list will be maintained and places re-allocated by lot as they become available.					
Additional information					
Workload					
300 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
<u>-</u>					
Module appears in Master's degree (1 major) Biochemistry (2015)					
Master's degree (1 major) Biochemistry (2015) Master's degree (1 major) Biochemistry (2017) Master's degree (1 major) Biochemistry (2019)					

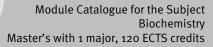
Module	title				Abbreviation
Virology 1 03-MS2V1-152-m01					03-MS2V1-152-m01
Module	coord	inator		Module offered by	
holder	of the (Chair of Virology		Faculty of Medicine	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
10	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
This mo	odule w	vill discuss contemporary	topics in virology.		
Intende	ed leari	ning outcomes			
Studen	ts are a	able to understand currer	nt problems in virolog	y and to discuss the	ese in detail.
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (1) + 9 Module		t in: English			
		<u> </u>	ge — if other than German, e	examination offered — if no	ot every semester, information on whether
		le for bonus)			, .
b) oral (c) oral (Langua	examin examin ge of a	nination (approx. 45 to 9 ation of one candidate e ation in groups of up to 3 ssessment: German and, ffered: Once a year, winte	ach (20 to 30 minute: 3 candidates (15 to 30 /or English	-	late)
Allocat		•			
Biochei sters. A	mie (Bi mong a	ochemistry), Master's: 3	number of subject se	emesters, places wil	g to the number of subject seme- l be allocated by lot. A waiting
Additio	nal inf	ormation			
Worklo	ad				
300 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	appea	in and the second se			
	-	ee (1 major) Biochemistry			
	•	ee (1 major) Biochemistry			
Master	s degr	ee (1 major) Biochemistry	(2019)		

Module title Abbreviation					Abbreviation
Virology 2 03-MS2V2-152-m01					03-MS2V2-152-m01
Module	e coord	inator		Module offered by	
holder	of the (Chair of Virology		Faculty of Medicine	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
10	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
This mo	odule w	vill discuss contemporary	topics in virology.		
Intende	ed leari	ning outcomes			
Studen	ts are a	able to understand currer	nt problems in virolog	y and to discuss the	ese in detail.
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (1) + S Module		t in: English			
			ge — if other than German, e	examination offered — if no	t every semester, information on whether
		le for bonus)			
b) oral c) oral e	examin examin	nination (approx. 45 to 9 ation of one candidate e ation in groups of up to 3 ssessment: German and	ach (20 to 30 minute 3 candidates (15 to 30	-	late)
		ffered: Once a year, sum			
Allocat	ion of p	olaces			
sters. A	mong		number of subject s	emesters, places wil	g to the number of subject seme- l be allocated by lot. A waiting
Additio	nal inf	ormation			
Worklo	ad				
300 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	e appea	in and the second se			
	-	ee (1 major) Biochemistry	-		
	-	ee (1 major) Biochemistry			
Master	s degr	ee (1 major) Biochemistry	(2019)		

Module	title				Abbreviation
Bacterial genetics - Infectiology					03-98-PBG-152-m01
Module	coord	inator		Module offered by	
Institut	e of Mo	lecular Infection Biology		Faculty of Medicine	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	undergraduate			
Conten	ts				
cular m	icrobio		are analysed with the	help of examples o	n selected questions from mole- f gene transfer. Molecular genetic biology.
Intende	ed learr	ning outcomes			
based of tics. The	on indiv ey also	vidually assigned tasks, u	using techniques of n experimental design	nodern molecular bi	problems in bacterial genetics ology, microbiology and gene- analysis and the presentation of
Courses	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (1) + S	5 (1) + Ü	j (4)			
		e essment (type, scope, langua; le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
b) log (2 c) oral e d) oral e e) prese	20 to 3 examin examin entatio	nination (approx. 45 to 9 o pages) or ation of one candidate ea ation in groups of up to <u>3</u> n (20 to 40 minutes) ssessment: German and/	ach (20 to 30 minutes 3 candidates (15 to 30	-	late) or
Allocati	ion of p	olaces			
sters. A	monga		number of subject se	emesters, places wil	g to the number of subject seme- l be allocated by lot. A waiting
Additio	nal info	ormation			
Worklo	ad				
150 h					
Teachir	ng cycl	e			
Referre	d to in	LPOI (examination regulations	s for teaching-degree progra	mmes)	
Module					
Master'	s degre	ee (1 major) Biochemistry ee (1 major) Biochemistry ee (1 major) Biochemistry	(2017)		

Module title Abbreviation					
Cardiovascular Biology 03-98-MVKB-152-m01					01
Module coordinator Module offered by					
holder of	the Chair of Experimental B	omedicine Faculty of Medicine			
ECTS N	Nethod of grading	Only after succ. con	npl. of module(s)		
5 n	umerical grade				
Duration	Module level	Other prerequisites			
1 semeste	er graduate				
Contents					
Becoming familiar with the basics of the cardiovascular system by means of a lecture series. The first section comprises the anatomical, physiological and biochemical basis. In the second section these fundamentals will be deepened based on relevant cardiovascular diseases of platelets, the vasculature and the heart. In the context of these disorders, current and future targets for adequate therapies will be discussed.					
	learning outcomes	to understand the mak	cular and physiolog	ical basics relevant	for cardia
vascular l by stroke ture serie	have developed the ability biology, with the focus on d e, myocardial disorders, met es, students will be able to u ting the cardiovascular syst	evelopmental biology, abolic syndrome, vascı nderstand, describe ar	platelets and coagul ulitides and genetic of	ation. These will be causes. After attendi	exemplified ng the lec-
Courses (type, number of weekly contact hour	5, language — if other than Ger	man)		
V (2)	aught in: German/English				
Method o	of assessment (type, scope, lang	uage — if other than German, o	examination offered — if no	t every semester, informati	on on whether
module is cr	reditable for bonus)				
 a) written examination (30 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes) or e) presentation (20 to 45 minutes) Students will be informed about the method, length and scope of the assessment prior to the course. Language of assessment: German or English Assessment offered: Once a year, winter semester 					
Allocatio	n of places				
Additiona	al information				
Workload	ł				
150 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Module appears in Master's degree (1 major) Biochemistry (2015) Master's degree (1 major) Experimental medicine (2015) Master's degree (1 major) Experimental medicine (2015) Master's degree (1 major) Biochemistry (2017)					
Master's with	1 major Biochemistry (2017)	-	• generated 19-Apr-2025 • e Master (120 ECTS) Biochemie	-	page 46 / 192

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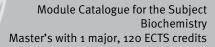


Supplementary course Translational Medicine (2018) Master's degree (1 major) Biomedicine (2018) Master's degree (1 major) Translational Medicine (2018) Master's degree (1 major) Biochemistry (2019)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 47 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Module title Abbreviation							
Molecular Oncology 03-98-MVMO-152-m01					101		
Module coordinator Module offered by							
holder	of the (Chair of Biochemistry a	nd Molecular Biology				
ECTS	Metho	od of grading	Only after succ. compl. of module(s)				
5	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ts						
cancer; signalli cells; m	Molecular mechanisms of tumourigenesis; experimental dissection of tumours; metabolic reprogramming in cancer; visualising in vivo tumour progression and response to therapy; targeting Myc for tumour therapy; Wnt signalling and colorectal cancer; cell cycle and tumour suppressor genes; protein turnover in normal and cancer cells; molecular mechanisms of melanoma development; tumour immunology; stem cells and epigenetics; si- gnal transduction and personalised cancer therapy; molecular pathology; infections and tumour development.						
		-	ics and challenges in tu	imour research and	the methods used to	address	
such ch						/ ddule55	
Course	S (type, r	umber of weekly contact hour	s, language — if other than Gei	man)			
V (2) Module	e taugh	t in: German/English					
		essment (type, scope, lang le for bonus)	uage — if other than German,	examination offered — if no	t every semester, informati	on on whether	
 a) written examination (30 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes) or e) presentation (20 to 45 minutes) Students will be informed about the method, length and scope of the assessment prior to the course. Language of assessment: German or English Assessment offered: Once a year, winter semester 							
Allocat							
Additio	onal inf	ormation					
 Worklo	ad						
150 h							
Teaching cycle							
· · · · · · · · · · · · · · · · · · ·							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module appears in							
Master's degree (1 major) Biochemistry (2015) Master's degree (1 major) Biomedicine (2015) Master's degree (1 major) Experimental medicine (2015) Master's degree (1 major) Biochemistry (2017) Supplementary course Translational Medicine (2018) Master's degree (1 major) Biomedicine (2018)							
		(2017)	-	Master (120 ECTS) Biochemie	-	page 48 / 192	





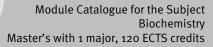
Master's degree (1 major) Translational Medicine (2018) Master's degree (1 major) Biochemistry (2019)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 49 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Module	title				Abbreviation	
Clinical Oncology				03-ONC-CLIN-152-m01		
Module	coord	inator		Module offered by		
holder	of the (Chair of Translational Onc	cology	Faculty of Medicine		
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 semes	ster	graduate				
Conten	ts					
In the module "Klinische Onkologie" ("Clinical Oncology"), various clinicians will present a current view of the di- sease "cancer". Topics will include an overview of different tumour entities (including cancers of the blood, skin, breast, lung, liver, colon, endocrine system), treatment modalities (e. g. immunotherapy, radiation-based thera- py, personalised medicine), diagnostics, pathology, clinical studies.						
Intende	ed leari	ning outcomes				
		ding of the biological com eds, possibilities and lim			t tumour types. An understan-	
Courses	5 (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V (2) Module	taugh	t in: German or English				
		essment (type, scope, langua; le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
c) oral e d) oral e Student	examin examin ts will l	mination (30 to 60 minute ation of one candidate ea pation in groups of up to 3 be informed about the me ssessment: German and/	ach (30 to 60 minute: 3 candidates (approx ethod, length and sco	. 30 to 60 minutes)	nt prior to the course.	
Allocati						
Additio	nal inf	ormation				
Worklo	ad					
150 h						
Teachir	ng cycl	e				
Referre	d to in	LPOI (examination regulations	s for teaching-degree progra	mmes)		
Module	appea	nrs in				
Master'	s degr	ee (1 major) Biochemistry	r (2015)			
	-	ee (1 major) Biomedicine				
	-	ee (1 major) Biochemistry				
	-	ee (1 major) Biomedicine ee (1 major) Biochemistry				
mastel	5 uegli	ee (1 major) biochemistry	(2019)			

Module title				Abbreviation		
Stem C	ell Biol	ogy			03-98-MVSZ-152-m	01
Module	e coordi	nator		Module offered by		
holder	of the C	hair of Developmental	Biochemistry	Faculty of Medicine		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
In this module, selected current problems from the fields of stem cell biology, cellular differentiation and rege- nerative medicine are used to provide basic knowledge as well as analytical approaches. The current state of re- search is considered on the basis of the historical context. Selected examples are used to learn about topic-spe- cific contexts. Special emphasis is placed on the methodology used to study and characterize stem cells at the molecular level in vivo and in vitro. Bioethical and legal frameworks are discussed in the course of the lecture.						
Intende	ed learr	ning outcomes				
Necessary basic knowledge to work on, analyze and critically interpret questions from stem cell biology, cellular differentiation and regenerative medicine on the basis of current literature. A basic methodological competence for independent scientific work in the field of stem cell biology. Development of an ethical awareness in relation to the application of stem cells in biomedicine.						
Courses (type, number of weekly contact hours, language — if other than German)						
V (2) Module	e taugh	t in: German/English				
Method	l of ass	essment (type, scope, lang	uage — if other than German,	examination offered — if no	t every semester, informati	on on whether
module is	creditab	le for bonus)				
 a) written examination (30 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes) or e) presentation (20 to 45 minutes) Students will be informed about the method, length and scope of the assessment prior to the course. Language of assessment: German or English Assessment offered: Once a year, summer semester 						
Allocat	ion of p	laces				
Additio	nal info	ormation				
Worklo	ad					
150 h						
Teachir	ng cyclo	9				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	e appea	rs in				
Master' Master'	Module appears inMaster's degree (1 major) Biochemistry (2015)Master's degree (1 major) Biomedicine (2015)Master's degree (1 major) Experimental medicine (2015)Master's degree (1 major) Biochemistry (2017)					
Master's wi	th 1 major	Biochemistry (2017)	-	• generated 19-Apr-2025 • e Master (120 ECTS) Biochemie	_	page 51 / 192

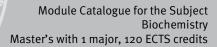
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Supplementary course Translational Medicine (2018) Master's degree (1 major) Biomedicine (2018) Master's degree (1 major) Translational Medicine (2018) Master's degree (1 major) Biochemistry (2019)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 52 / 192
	data record Master (120 ECTS) Biochemie - 2017	1

Module title				Abbreviation		
Clinical Neurobiology			03-98-MVKN-152-m	01		
Module	Module coordinator			Module offered by		
Managi	ng Dire	ector of the Institute of	Clinical Neurobiology	Faculty of Medicine		
ECTS Method of grading Only after succ. compl. of module(s)			npl. of module(s)			
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
pics wil thies, s kinson, on, mu ses, hip emotio sleep, f on func proach the ear Intende Studen concep cus to c	Students will get a theoretical introduction and amplification of topics in clinical neurobiology. The following to- pics will be discussed: introduction to neurons and glia, ion channels and membrane potential, ion channelopa- thies, synapses, transmitter release, NMJ, myasthenia gravis, cerebellum, basal ganglia, ataxia and Morbus Par- kinson, somatosensory system, touch, pain, schizophrenia and autism spectrum disorders, disorders of cogniti- on, muscle and muscle diseases, anatomy and function of the motor system, spinal reflexes, motoneuron disea- ses, hippocampus, learning and memory, anterograde amnesia, visual agnosia, cortex and the limbic system, emotions, disorders of conscious and unconscious mental processes, attention, smell and taste and hearing , sleep, EEG, epilepsy, vision and diseases of the visual system. The accompanied literature seminars are based on fundamental and current literature on lecture-relevant topics to discuss experimental and methodological ap- proaches and with this promoting translational thinking. Using student presentations of current research results, the earned knowledge in neurobiology is recessed. Intended learning outcomes Students who successfully completed this module are able to remind and understand the current theoretical concepts in neurobiology. Furthermore, students are able to classify clinical aspects of neurobiology with the fo- cus to disease mechanisms at molecular, cellular, and physiological levels. Based on current experimental data evaluation, students are able to critical read and evaluate current publications in neurobiology as well as extract					
		nation from recent pub	lICatIONS. s, language — if other than Ger	man)		
V (2) +	S (2)					
Method	d of ass	t in: English essment (type, scope, lang le for bonus)	uage — if other than German, (examination offered — if no	t every semester, informati	on on whether
b) oral c) oral d) pres Studen	examin examin entatio ts will l	ation in groups of up to n (20 to 45 minutes)	utes) or each (30 to 60 minute o 3 candidates (approx method, length and sco	. 30 to 60 minutes) o		2.
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Workload						
150 h						
Teachi	ng cycl	9				
	-					
Referre	d to in	LPO I (examination regulati	ons for teaching-degree progra	mmes)		
		-	- · · · ·			
Master's wi	th 1 major	Biochemistry (2017)	-	s • generated 19-Apr-2025 • e Master (120 ECTS) Biochemie	-	page 53 / 192

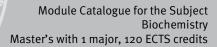


Module appears in

Master's degree (1 major) Biochemistry (2015) Master's degree (1 major) Biomedicine (2015) Master's degree (1 major) Experimental medicine (2015) Master's degree (1 major) Biochemistry (2017) Master's degree (1 major) Biomedicine (2018) Master's degree (1 major) Biochemistry (2019)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 54 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Module title				Abbreviation		
Tissue	Engine	ering / Functional Mate	erials		03-98-MVTF-152-m	01
Module	coord	inator		Module offered by		
holder o Medicir		Chair of Tissue Engineer	ing and Regenerative	Faculty of Medicine		
ECTS Method of grading		Only after succ. com	pl. of module(s)			
5	numer	rical grade				
Duratio	n	Module level	odule level Other prerequisites			
1 semes	ster	graduate				
Conten	ts					
intestin plants i In detai	e, lung s discu l, these nd Drug	chnology, basics of tiss a, trachea, blood-brain b issed, as well as the reg e are REACH (Registrations as Act, GLP (Good Labor	parrier, tumors and oth gulatory basis for the a on, Evaluation, Restrict	er diseases. The dev pproval of these and ion and Authorizatic	velopment of cell-ba l of medical devices on of Chemicals), the	sed trans- and drugs. Medical De-
	-	ning outcomes				
The stu and bas nobiolo se lead penden derstan	The student has expertise in tissue engineering, regenerative medicine, bioprocess engineering, test systems and basic relationships in the field of cell biology, metabolism, differentiation, adhesion to surfaces and mecha- nobiology. The student has methodological competence in quality management. The contents taught in the cour- se lead to a deeper understanding of these competence fields and enable the application, which allows an inde- pendent assessment by analyzing publications or questions. For this purpose, the student should be able to un- derstand a scientific publication in this field, to acquire additional background knowledge independently and, after analyzing the experimental results, to evaluate and discuss them critically.					
Courses	5 (type, n	umber of weekly contact hours	, language — if other than Ger	man)		
V (2) Module	taugh	t in: German/English				
		essment (type, scope, langule for bonus)	uage — if other than German, e	examination offered — if no	t every semester, informati	ion on whether
b) log (a c) oral e d) oral e e) prese Student Langua	approx examin examin entatio ts will l ge of a	nination (30 to 60 minu . 10 to 20 pages) or ation of one candidate ation in groups of up to n (20 to 45 minutes) be informed about the r ssessment: German or ffered: Once a year, win	each (30 to 60 minutes 3 candidates (approx nethod, length and sco English	. 30 to 60 minutes) c		e.
Allocati	ion of p	olaces				
Additio	nal info	ormation				
Worklo	ad					
150 h						
Teachir	ig cycl	e				
Referre	d to in	LPOI (examination regulation	ons for teaching-degree progra	mmes)		
Mactoric	th 1 maio	Biochemistry (2017)	16411 16/03	• generated to Apr 2005 - 2	vam reg	Dago 55 / 400
master S WI	ui i illajof	biochemistry (2017)	-	• generated 19-Apr-2025 • e. Master (120 ECTS) Biochemie	-	page 55 / 192



Module appears in

Master's degree (1 major) Biochemistry (2015) Master's degree (1 major) Biomedicine (2015) Master's degree (1 major) Experimental medicine (2015) Master's degree (1 major) Biochemistry (2017) Supplementary course Translational Medicine (2018) Master's degree (1 major) Biomedicine (2018) Master's degree (1 major) Translational Medicine (2018) Master's degree (1 major) Biochemistry (2019)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 56 / 192
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Module	e title				Abbreviation
Literatu	ure sen	ninar 2			08-MBC-LIT2-152-m01
Module	e coord	inator		Module offered by	
chairperson of examination committee Biochemie (Bio mistry)			Biochemie (Bioche-	Chair of Biochemist	try
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
present sions o	tations f the re	on those publications to	their classmates. Th tact the module coor	ose presentations w	in the life sciences and deliver ill be followed by critical discus- o find out if you can use this mo-
Intende	ed leari	ning outcomes			
	d of the				biochemistry-related literature in and discussion of scientific in-
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
S (2) Module	e taugh	t in: German or English			
		s essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
		20 to 40 minutes) ssessment: German and,	/or English		
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
150 h					
Teachi	ng cycl	е	,		
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
Module	e appea	ins in			
	-	ee (1 major) Biochemistry			
	•	ee (1 major) Biochemistry			
Master	Master's degree (1 major) Biochemistry (2019)				



Module	title				Abbreviation
Tumor	Tumor Genetics				03-MBC-TG-161-m01
Module coordinator Module offe			Module offered by		
	holder of the Professorship Human Genetics at Institute Human Genetics			Institute of Human	Genetics
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	graduate			
Conten	ts				
cer, HN	PCC, FA				ry cancer (breast & ovarian can- cancer genetics, genetic techni-
Intende	ed learr	ning outcomes			
ry cance of tumo	er. Nam or genet	ne and illustrate genetic i	methods. Apply the a ation and presentatic	cquired knowledge t	y pathomechanisms in heredita- to scientific questions in the field es. Acquire the ability to critically
Courses	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
V (1) + S Module	.,	t in: English			
Method	l of ass	essment (type, scope, langua	ge — if other than German, e	examination offered — if no	t every semester, information on whether
		le for bonus)	• • >		
b) log (2 c) oral e d) oral e e) prese	20 to 3 examin examin entatio	nination (approx. 45 to 9 o pages) or ation of one candidate e ation in groups of up to <u>3</u> n (20 to 40 minutes) ssessment: German and,	ach (20 to 30 minutes 3 candidates (15 to 30		late) or
Allocati	ion of p	olaces			
Additio	nal info	ormation			
Worklo	ad				
150 h					
Teachir	ng cycl	9			
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
 Modula	30000	rcin			
Module Master		ee (1 major) Biochemistry	(2015)		
	-	ee (1 major) Biomedicine	-		
	-	ee (1 major) Biochemistry	-		
	-	ee (1 major) Biomedicine			
Master'	s degre	ee (1 major) Biochemistry	(2019)		



Focus - Molecular Oncology

(50 ECTS credits)

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	data record Master (120 ECTS) Biochemie - 2017	



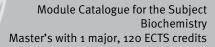
Subfield - Tumor Biology

(35 ECTS credits)

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	data record Master (120 ECTS) Biochemie - 2017	

Module title				Abbreviation		
Molecu	ılar On	cology			03-98-MVMO-152-n	101
Module	e coord	inator		Module offered by		
holder	of the (Chair of Biochemistry a	nd Molecular Biology			
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
cancer; signalli cells; m gnal tra	Molecular mechanisms of tumourigenesis; experimental dissection of tumours; metabolic reprogramming in cancer; visualising in vivo tumour progression and response to therapy; targeting Myc for tumour therapy; Wnt signalling and colorectal cancer; cell cycle and tumour suppressor genes; protein turnover in normal and cancer cells; molecular mechanisms of melanoma development; tumour immunology; stem cells and epigenetics; signal transduction and personalised cancer therapy; molecular pathology; infections and tumour development. Intended learning outcomes					
	ts und	erstand the current top	ics and challenges in tu	umour research and	the methods used to	address
			s, language — if other than Ger	man)		
V (2)		t in: German/English				
		s essment (type, scope, lang le for bonus)	guage — if other than German, o	examination offered — if no	t every semester, informati	on on whether
c) oral (d) oral e) prese Studen Langua	 a) written examination (30 to 60 minutes) or b) log (approx. 10 to 20 pages) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (approx. 30 to 60 minutes) or e) presentation (20 to 45 minutes) Students will be informed about the method, length and scope of the assessment prior to the course. Language of assessment: German or English Assessment offered: Once a year, winter semester 					e.
Allocat						
Additio	nal inf	ormation				
Worklo	ad					
150 h						
Teachi	ng cycl	e				
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in						
Master's degree (1 major) Biochemistry (2015) Master's degree (1 major) Biomedicine (2015) Master's degree (1 major) Experimental medicine (2015) Master's degree (1 major) Biochemistry (2017) Supplementary course Translational Medicine (2018) Master's degree (1 major) Biomedicine (2018) Master's with 1 major Biochemistry (2017) JMU Würzburg • generated 19-Apr-2025 • exam. reg. page 61 / 192						
		(201/)	-	Master (120 ECTS) Biochemie	-	Page 01 / 192





Master's degree (1 major) Translational Medicine (2018) Master's degree (1 major) Biochemistry (2019)

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	data record Master (120 ECTS) Biochemie - 2017	

Module title				Abbreviation	
Clinical Oncology					03-ONC-CLIN-152-m01
Module	coord	inator		Module offered by	
holder	of the (Chair of Translational Onc	cology	Faculty of Medicine	
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	graduate			
Conten	ts				
sease " breast,	In the module "Klinische Onkologie" ("Clinical Oncology"), various clinicians will present a current view of the di- sease "cancer". Topics will include an overview of different tumour entities (including cancers of the blood, skin, breast, lung, liver, colon, endocrine system), treatment modalities (e. g. immunotherapy, radiation-based thera- py, personalised medicine), diagnostics, pathology, clinical studies.				
Intende	ed lear	ning outcomes			
		ding of the biological com eds, possibilities and lim			t tumour types. An understan-
Courses	5 (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
V (2) Module	taugh	t in: German or English			
Method	l of ass	sessment (type, scope, langua	ge — if other than German, e	examination offered — if no	t every semester, information on whether
		le for bonus)			
c) oral e d) oral e Student	examin examir ts will	mination (30 to 60 minute ation of one candidate ea nation in groups of up to 3 be informed about the me ssessment: German and/	ach (30 to 60 minute: 3 candidates (approx ethod, length and sco	. 30 to 60 minutes)	nt prior to the course.
Allocati	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
150 h					
Teachir	ıg cycl	е			
Referre	d to in	LPOI (examination regulations	s for teaching-degree progra	mmes)	
Module appears in					
	Master's degree (1 major) Biochemistry (2015)				
Master's degree (1 major) Biomedicine (2015)					
	-	ee (1 major) Biochemistry ee (1 major) Biomedicine			
	-				
Master's degree (1 major) Biochemistry (2019)					

Module	Module title Abbreviation				
Oncolo	gy Sen	ninar 1			03-ONC-SEM1-152-m01
Module	e coord	inator		Module offered by	
holder	of the (Chair of Biochemistry and	Molecular Biology		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
are rea	d and c				al publications in cancer research tly attend the lecture "Molecular
Intende	ed leari	ning outcomes			
Critical	readin	g and understanding of p	rimary literature in m	olecular biology and	d cancer research.
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
S (1) Module	taugh	t in: German or English			
			ge — if other than German, e	examination offered — if no	t every semester, information on whether
		le for bonus)			
b) pres	entatio	nination (approx. 45 to 9 n (20 to 40 minutes) ssessment: German and/			
Allocat					
mester	s. Amo		me number of subjec	t semesters, places	ng to the number of subject se- will be allocated by lot. A waiting
Additio	nal inf	ormation			
Worklo	ad				
150 h					
Teachir	ıg cycl	e			
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)				
Module appears in					
	Master's degree (1 major) Biochemistry (2015)				
	0	ee (1 major) Biochemistry	· //		
Master's degree (1 major) Biochemistry (2019)					

Module title Abbreviation					Abbreviation	
Oncolo	gy Sen	ninar 2		03-ONC-SEM2-152-m01		
Module	coord	inator		Module offered by		
holder	of the (Chair of Translational Onc	cology	Faculty of Medicine		
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
arch are	e read a				nal publications in cancer rese- urrently attend the lecture "Clini-	
Intende	ed learı	ning outcomes				
Critical	readin	g and understanding of p	rimary literature in m	olecular biology and	d cancer research.	
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
S (1) Module	taugh	t in: German or English				
Method	l of ass	essment (type, scope, langua	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
		le for bonus)				
b) pres	entatio	nination (approx. 45 to 9 n (20 to 40 minutes) ssessment: German and/				
Allocat			-			
mesters	s. Amo		me number of subject	t semesters, places	ng to the number of subject se- will be allocated by lot. A waiting	
Additio	nal inf	ormation				
Worklo	ad					
150 h						
Teachir	ng cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
	Master's degree (1 major) Biochemistry (2015)					
	-	ee (1 major) Biochemistry				
Master's degree (1 major) Biochemistry (2019)						

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Module title					Abbreviation	
Experimental Tumor Biology					03-ONC-TUMP-152-m01	
Module coordinator				Module offered by		
holder	of the (Chair of Biochemistry and	Molecular Biology			
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
10	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
model s cytome rent) at	system try, tiss tendar	s (tissue culture and anir sue staining & microscop	nal models) and expe y, quantitative expres Ilare Onkologie" ("Mo	erimental approache ssion analysis, meta	gy"), students learn about various is in cancer research (e.g. flow ibolic analyses). Prior (or concur- and the course "Seminare in On-	
Intende	ed lear	ning outcomes				
	-	selected tumour models vant primary literature.	and techniques for e	xperimental tumour	research. Ability to read and un-	
Course	S (type, r	umber of weekly contact hours, l	anguage — if other than Ger	man)		
P (8) Module	e taugh	t in: German or English				
Method	l of ass		ge — if other than German, e	examination offered — if no	t every semester, information on whether	
b) pres	entatio	o pages) or n (20 to 40 minutes) ssessment: German and/	/or English			
Allocat	ion of p	olaces				
mester	s. Amo		me number of subject	t semesters, places	ng to the number of subject se- will be allocated by lot. A waiting	
Additio	nal inf	ormation				
Worklo	ad					
300 h						
Teachir	ıg cycl	e				
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in						
	-	ee (1 major) Biochemistry				
	-	ee (1 major) Biochemistry ee (1 major) Biochemistry				
master	Master's degree (1 major) Biochemistry (2019)					

Module	Module title Abbreviation				
Lab rot	ation O	ncology			03-ONC-LAB1-152-m01
Module	coord	inator		Module offered by	
lecture	rs Medi	cine		Faculty of Chemistry	y and Pharmacy
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
Under t researc	-	•	entists, students will	work on an ongoing	project in cancer research in a
Intende	ed learr	ning outcomes			
Hands-	on exp	erience with experimenta	ll cancer research.		
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
P (6)					
		t in: German or English			
		s essment (type, scope, langua; le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
b) pres	entatio	o pages) or n (20 to 40 minutes) ssessment: German and/	or English		
Allocat	ion of p	olaces			
mester	s. Amoi		me number of subjec	t semesters, places	ng to the number of subject se- will be allocated by lot. A waiting
Additio	nal info	ormation			
Worklo	ad				
150 h					
Teachir	ng cycl	e			
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)				
Module appears in					
Master	's degre	ee (1 major) Biochemistry	(2015)		
	-	ee (1 major) Biochemistry			
Master's degree (1 major) Biochemistry (2019)					



Subfield - Structural and Functional Biochemistry

(15 ECTS credits)

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	data record Master (120 ECTS) Biochemie - 2017	

Module title				Abbreviation		
RNA worlds					08-MBC-RNAW-152-m01	
Module	coord	inator		Module offered by		
holder	of the C	Chair of Biochemistry		Chair of Biochemist	ry	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	Contents					
state of	This module comprises a lecture and a seminar. It provides a detailed and in-depth exploration of the current state of research on RNA-protein complexes, their structures and functions as well as the theoretical principles of cutting-edge RNA-based research methods.					
Intende	ed learn	ning outcomes				
learned	l to nev		e to situate new resea		able to transfer what they have the context of existing knowledge	
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V (1) + 9						
Module	taugh	t in: German or English				
			ge — if other than German, e	examination offered — if no	t every semester, information on whether	
· · · · · · · · · · · · · · · · · · ·		le for bonus) nination (30 to 60 minut	es) or			
		. 10 to 20 pages) or				
		ation of one candidate e				
		ation in groups of up to g n (20 to 45 minutes)	3 candidates (approx.	. 30 to 60 minutes) c	or	
		be informed about the mo	ethod, length and sco	pe of the assessme	nt prior to the course.	
Langua	ge of a	ssessment: German and,	or English	-		
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
150 h						
Teachir	ng cycl	9				
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in						
		ee (1 major) Biochemistry				
	Master's degree (1 major) Biomedicine (2015) Master's degree (1 major) Biochemistry (2017)					
	-	ee (1 major) Biochemistry				
	-	ee (1 major) Biochemistry				

Module title				Abbreviation		
Life cycle of proteins					08-MBC-LCP-152-m01	
Module	coord	inator		Module offered by		
holder o	of the C	Chair of Biochemistry		Chair of Biochemist	ry	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	numei	rical grade				
Duratio	n	Module level	Other prerequisites			
1 semes	ster	graduate				
Content	Contents					
	This module comprises a lecture and a seminar. It provides a detailed and in-depth exploration of the current state of research on the regulation and control of the entire life cycle of proteins.					
Intende	d learr	ning outcomes				
learned	to nev		e to situate new resea		able to transfer what they have he context of existing knowledge	
Courses	5 (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
V (1) + S Module		t in: German or English				
		e ssment (type, scope, langua) le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
b) log (a c) oral e d) oral e e) prese Student	approx examin examin entatio ts will b	nination (30 to 60 minuto . 10 to 20 pages) or ation of one candidate ea ation in groups of up to 3 n (20 to 45 minutes) be informed about the mo ssessment: German and/	ach (30 to 60 minutes 3 candidates (approx ethod, length and sco	. 30 to 60 minutes) c		
Allocati						
	•					
Additio	nal info	ormation				
Workloa	ad					
150 h						
Teachin	ig cycl	e				
Referre	d to in	LPO I (examination regulations	for teaching-degree progra	mmes)		
Module appears in						
Master'	Master's degree (1 major) Biochemistry (2015)					
Master's degree (1 major) Biomedicine (2015)						
	Master's degree (1 major) Biochemistry (2017)					
	-	ee (1 major) Biomedicine				
master	s aegre	ee (1 major) Biochemistry	(2019)			

Module title					Abbreviation	
Structu	ure and	function of RNA-protei		08-MBC-RNP-152-m01		
Module coordinator Module offere			Module offered	by		
holder	ofthe	Chair of Biochemistry		Chair of Biochen	nistry	
ECTS	Meth	od of grading	Only after succ. com	npl. of module(s)		
10	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ester	graduate				
Conten	nts					
		actical experiments, stu ion of RNA-protein com		age with scientifi	c methods and lab techniques for	
Intend	ed lear	ning outcomes				
					o explain and critically reflect upon findings in a written report.	
Course	S (type, 1	number of weekly contact hours	, language — if other than Ger	rman)		
Ü (6)						
Module	e taugh	t in: German or English				
		sessment (type, scope, lang ble for bonus)	uage — if other than German, e	examination offered —	if not every semester, information on whether	
b) oral c) oral d) pres Langua	examir examir sentatic age of a	to pages) or nation of one candidate nation in groups of up to on (20 to 40 minutes) ussessment: German an offered: Once a year, wir	9 3 candidates (15 to 30 d/or English		didate) or	
Allocat	tion of	places				
Additio	onal inf	ormation				
Worklo	bad					
300 h						
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulation	ons for teaching-degree progra	mmes)		
Module	e appea	ars in				
Master	's degr	ee (1 major) Biochemist	ry (2015)			
	-	ee (1 major) Biochemist				
Mactor	's degr	ee (1 major) Biochemist	$r_{\rm V}(2010)$			

Module title					Abbreviation
Protein quality control					08-MBC-PQK-152-m01
Module coordinator				Module offered by	
holder of the Chair of Biochemistry				Chair of Biochemistry	
ECTS Method of grading		Only after succ. compl. of module(s)			
10	10 numerical grade				
Duration Module level		Module level	Other prerequisites		
1 semester graduate					
Contents					
Performing practical experiments, students will actively engage with scientific methods and lab techniques in the field of protein degradation in eukaryotes.					
Intended learning outcomes					
Students master the techniques used in the practical course. They are able to explain and critically reflect upon the experiments they have performed as well as to present and discuss their findings in a written report.					
Courses (type, number of weekly contact hours, language — if other than German)					
Ü (6)					
Module taught in: German or English					
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)					
 a) log (20 to 30 pages) or b) oral examination of one candidate each (20 to 30 minutes) or c) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate) or d) presentation (20 to 40 minutes) Language of assessment: German and/or English Assessment offered: Once a year, summer semester 					
Allocation of places					
Additional information					
Workload					
300 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Master's degree (1 major) Biochemistry (2015)					
Master's degree (1 major) Biochemistry (2017)					
Master's degree (1 major) Biochemistry (2019)					

Module title Abbreviation						
Macromolecular Crystallography 08-MBC-MK-152-m01						01
Module coordinator				Module offered by		
holder	of the (Chair of Biochemistry		Chair of Biochemist	ry	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
10	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
This module comprises a lecture, exercises and a lab course. The lecture will discuss the following topics: bio- physical characterisation of protein samples prior to crystallisation; manual and high-throughput methods for protein crystallisation; X-ray generators and synchrotrons, properties of X-rays; data collection using different de- tector systems; symmetry properties of molecules, point groups and space groups; the phase problem and so- lution of that problem using multiple isomorphous replacement, anomalous diffraction and molecular replace- ment; improvement of experimental phases by solvent flattening and molecular averaging; manual and automa- ted model building; refinement procedures and analysis of the experimentally determined structures. The exer- cises will give students the opportunity to explore the topics discussed in the lecture in more depth. In the lab course, students will carry out all of the steps involved in protein structure analysis that were discussed in the lecture. They will use lysozyme as an example enzyme and will carry out the following steps autonomously: cry- stallisation of the purified protein, data collection on the Institute's diffractometer, solution of the phase pro- blem using the anomalous signal from intrinsic sulphur atoms, model building, structure refinement, analysis of the refined structure.						
Intend	ed lear	ning outcomes				
will pro ge with using t ses for	ovide an the mo he met their N	n in-depth exploration ost intellectually challe hods. At the end of the laster's or doctoral the		exercise will give stud detail, and the lab co be able to perform co	dents the opportunit	ty to enga- practice in
			s, language — if other than Ge	rman)		
V (2) + Module		P (5) t in: German or English				
Metho	d of ass	sessment (type, scope, lang	guage — if other than German,	examination offered — if no	t every semester, informati	ion on whether
a) written examination (approx. 45 to 90 minutes) or b) log (20 to 30 pages) or c) oral examination of one candidate each (20 to 30 minutes) or d) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate) or e) presentation (20 to 40 minutes) Language of assessment: German and/or English Assessment offered: Once a year, summer semester						
Allocation of places						
Additional information						
Worklo	ad					
300 h						
Teachi	ng cycl	e				
Master's w	ith 1 majo	Biochemistry (2017)		g • generated 19-Apr-2025 • e Master (120 ECTS) Biochemie	-	page 73 / 192

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

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Module title					Abbreviation	
Mass-Spectrometry and Proteomicso8-MBC-MSP-152-mo1					101	
Module coordinator				Module offered by		
holder	of the (Chair of Biochemistry		Chair of Biochemist	try	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites	i		
1 seme	ster	graduate				
Conter	Its					
This module comprises a lecture, a seminar and a lab course. The lecture discusses the fundamental princip- les of the mass spectrometry of biomolecules. Topics to be covered in the lecture include ESI and MALDI ioni- sation techniques as well as the operating principles of TOF, Orbitrap and other mass analysers. The lecture al- so provides an introduction to CID and ETD fragmentation techniques, peptide and protein separation methods as well as the analysis of mass spectrometric data (protein databases, FDR, GO terms, etc.). It gives an overview of quantitative proteomics with a special focus on different stable isotope quantification methods (e.g. SILAC, N15 labelling, iTRAQ) and provides an insight into the mass spectrometric analysis of post-translational modi- fications. The seminar covers the fundamental principles of the analysis of mass spectrometric data. It introdu- ces students to different software packages and gives them the opportunity to independently develop solutions to a range of problems. In the lab course, students will use affinity purification to isolate a protein complex from yeast. They will then use 1D-SDS-PAGE to separate that complex and will proteolytically cleave it in the gel. After- wards, students will use nano-LC-MS/MS to analyse the petides thus obtained and will conduct a data analysis to identify specific interaction partners and post-translational modifications. Intended learning outcomes Students have learned the theoretical foundations of mass spectrometry protein and proteomic analysis. They have learned how to use proteomic data analysis software tools. Students have become proficient in the affini- ty purification of protein complexes and have learned the steps involved in the preparation of samples for mass spectrometry protein analysis, e.g. SDS-PAGE and in-gel digestion. They have gained an insight into how to ope- rate a nanoHPLC-coupled mass spectrometer. Courses (type, number of weekly contact hours, language – if other than German) V (2) + S (1) + P (2)						
		t in: German or English Sessment (type, scope, lang		examination offered — if no	ot every semester, informati	on on whether
		le for bonus)				
 a) written examination (approx. 45 to 90 minutes) or b) log (20 to 30 pages) or c) oral examination of one candidate each (20 to 30 minutes) or d) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate) or e) presentation (20 to 40 minutes) Language of assessment: German and/or English Assessment offered: Once a year, winter semester 						
Allocat	ion of p	olaces				
Biochemie (Biochemistry), Master's: 6 places. Places will be allocated according to the number of subject seme- sters. Among applicants with the same number of subject semesters, places will be allocated by lot. A waiting list will be maintained and places re-allocated by lot as they become available.						
Additio	onal inf	ormation				
Worklo	ad					
150 h						
Master's w	ith 1 majo	r Biochemistry (2017)		g • generated 19-Apr-2025 • e Master (120 ECTS) Biochemie	-	page 75 / 192

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) Biochemistry (2015) Master's degree (1 major) Biochemistry (2017)

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Module title Abbreviation					Abbreviation
Drug design 08-MCM3-152-m01					08-MCM3-152-m01
Module	coord	inator		Module offered by	
lecturer mistry)	rs Phar	mazeutische Chemie (Ph	armaceutical Che-	Institute of Pharma	cy and Food Chemistry
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	graduate			
Conten	ts				
teractio turally c cophore QSAR. F	ons, lea occurri e mode Predict	nd finding; lead optimisat ng substances. Theoretic els, docking, virtual scree	ion. Experimental me al methods: molecul ning, simulation met	ethods: bioassays, H ar modelling, structu hods, de novo desig	nechanisms, protein-ligand in- TS, combinatorial chemistry, na- re-based drug design, pharma- n. Ligand-based drug design. ase examples, prodrug strate-
Intende	ed lear	ning outcomes			
Studen	ts mas	ter the theoretical and ex	perimental methods	and aspects of drug	design.
Course	5 (type, r	number of weekly contact hours, l	anguage — if other than Gei	rman)	
S (2) + Í Module		t in: German or English			
		sessment (type, scope, langua le for bonus)	ge — if other than German,	examination offered — if no	t every semester, information on whether
		vith discussion (approx. ssessment: German and,			
Allocati	ion of p	olaces			
20 places. 4 places for students of the Master's degree programme Chemie (Chemistry): Places will be alloca- ted according to the same number of subject semesters; students who have chosen Medizinische Chemie (Me- dicinal Chemistry) as their focus will be given preferential consideration; among applicants with the same num- ber of subject semesters, places will be allocated by lot.; 6 places for students of the Master's degree program- me Biochemie (Biochemistry): Places will be allocated according to the number of subject semesters; among ap- plicants with the same number of subject semesters, places will be allocated by lot; a waiting list will be maintai- ned and places re-allocated by lot as they become available.					
Additio	nal inf	ormation			
Worklo	ad				
150 h					
Teachir	ıg cycl	e			
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
		•			
Module			(2015)		
	-	ee (1 major) Biochemistry ee (1 major) Chemistry (2			
	-	ee (1 major) Biochemistry			

Master's with 1 major Biochemistry (2017)

Module title Abbreviation							
Biophysics of Proteins 03-MBC-PBP-172-m01							
Module coordinator Module offered by							
Chair of Rudolf Virchow Center for Experimental Biomedici- Faculty of Medicine							
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ts						
zation of lenges the bas pe. Amo and ligh selecte	The module "Protein Biophysics" will provide participants with detailed insights into the biophysical characteri- zation of proteins. We will deal both with soluble model proteins (Dr. Sonja Lorenz) and with the particular chal- lenges of membrane protein research (Dr. Sebastian Geibel). The module contains a lecture part that deals with the basics of different biophysical methods to characterize protein stability, oligomerization behavior and sha- pe. Among others, small angle X-ray scattering (SAXS), circular dichroism (CD) spectroscopy, fluorimetry (DSC) and light scattering (DLS + MALS) are discussed. The lectures will be complemented by short presentations on selected topics. In the practical part of the course, the techniques discussed will be applied using self-isolated proteins, data will be analysed with computer support and interpreted scientifically.						
Intende	ed learr	ning outcomes					
cularitie method	es of w Is to th	ts get an overview of the orking with membrane p eir practical application ssion of the researcher'	roteins. The acquired to the scientific analy	knowledge ranges f	rom the theoretical b	pasics of the	
Course	S (type, n	umber of weekly contact hours,	language — if other than Ger	rman)			
V (2) + 3							
		t in: English					
		essment (type, scope, langu le for bonus)	age — if other than German, o	examination offered — if no	t every semester, informati	on on whether	
b) log (: c) oral e d) oral e e) prese	a) written examination (approx. 45 to 90 minutes) or b) log (20 to 30 pages) or c) oral examination of one candidate each (20 to 30 minutes) or d) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate) or e) presentation (20 to 40 minutes) Language of assessment: German and/or English						
Allocat	ion of p	olaces					
		ochemistry) Master's: 6	3 places.				
Additio	nal info	ormation					
Workload							
150 h							
Teaching cycle							
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
		•					
Module			(a a 4 =)				
	-	ee (1 major) Biochemistr ee (1 major) Biochemistr					
Master's wi	th 1 major	Biochemistry (2017)	-	g • generated 19-Apr-2025 • e Master (120 ECTS) Biochemie	-	page 78 / 192	

Module	e title				Abbreviation			
Electro	on micro	oscopy and image proces	ssing in structural bio	logy	08-MBC-EMV-172-m01			
Modul	e coord	inator		Module offered by				
holder	of the (Chair of Biochemistry		Chair of Biochemis	try			
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)				
5	nume	rical grade		-				
Duratio	on	Module level	Other prerequisites					
1 seme	ester	graduate						
Conten	nts							
sample ment a ta. The sificati on are graphy nar par The stu ons. So dies wi develo further Intendo	e prepa lignme focus i on and discuss Finally rt of the udents ome of ill be pr p a criti deeper ed lear rticipar	ration for electron micros nt and data acquisition. s on the principles of sin three-dimensional imag sed. The learned principle y, micro electron diffracti module some aspects of will read these case stud the questions will be add esented by one student ical understanding of the ned by arithmetic exercise ning outcomes	scopy in structural bio The second part of the gle image analysis. The e reconstruction. DeN es are then applied to on is presented as an f the lecture are deep ies in advance. In this dressed independentl each. All case studies advantages and limi- res.	ology will be discuss e lecture concentrate his includes the alig ovo and iterative me o the special cases of alternative to X-ray ened on the basis o s work they are guide y in a written homew will be explained in tations of the methor microscopy and ima	equently, different methods of ed as well as strategies for instru- es on the processing of image da nment of image data, their clas- ethods of 3D image reconstructi- of 2D crystal analysis and tomo- structure analysis. In the semi- f case studies from the literature ed through a catalogue of questi- vork in advance. Most case stu- n a discussion. The participants od. Some selected topics will be			
unders Course	stand, c es (type, r	hese can be applied and ommunicate and critical number of weekly contact hours,	y evaluate primary lit	erature on this meth	d, all participants will be able to nod.			
V (1) + Module		t in: German or English						
Metho	d of ass	Sessment (type, scope, langua	ge — if other than German, e	examination offered — if no	ot every semester, information on whether			
module is creditable for bonus) a) written examination (approx. 45 to 90 minutes) or b) log (20 to 30 pages) or c) oral examination of one candidate each (20 to 30 minutes) or d) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate) or e) presentation (20 to 40 minutes) Language of assessment: German and/or English Allocation of places								
Allocat								
Allocat								
		ormation						
		ormation						
	onal inf	ormation						
 Additic	onal inf	ormation						
 Additic Worklo 150 h	onal inf							
 Additic Worklo 150 h	onal inf oad							

Referred to in LPO I (examination regulations for teaching-degree programmes)

Module appears in

Master's degree (1 major) Biomedicine (2015) Master's degree (1 major) Biochemistry (2017) Master's degree (1 major) Biomedicine (2018) Master's degree (1 major) Biochemistry (2019)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 80 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Module title Abb					Abbreviation
Practical course of electron microscopy and image processing 08-MBC-EMP-172-m01					
Modul	e coord	linator		Module offered by	
holder of the Chair of Biochemistry				Chair of Biochemistry	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
10	nume	rical grade			
Duration Module level		Module level	Other prerequisites		
1 semester graduate		graduate			
Contents					
The module "Practical Course Electron Microscopy and Single Image Processing" consists of an electron micros-					

copy part and an image processing part. In the electron microscopy part the participants get to know the different elements of the electron microscope and how they work. Aspects of alignment, focusing and data acquisition will be developed. The participants will then use different preparation methods for electron microscopy (grid preparation, negative contrast and vitrification). The samples are then imaged in an electron microscope. Sample and data optimization are developed and data sets are created for further image processing. In the image processing part, the participants are first introduced to general aspects of computer operation under Linux (basic Linux commands, basic shell scripting). On this basis, the participants determine the structure of a protein complex from a real test data set. They learn step by step how to select good images, how to correct data for imagedependent aberrations and how to normalize, mask and filter image data. With the data prepared in this way, the participants will determine the characteristic views of the complex (2D classification) and combine these with various methods to form a DeNovo model. This model is then refined in an iterative process. In the second part of the image processing practical course the participants apply what they have learned to their own data. At the end of the practical course the participants present the different working steps and exchange experiences. The practical part of the electron microscopy practical course and the image processing practical course on test data will be summarized in a protocol. The results on the own data are presented in the form of a scientific publication, which requires a corresponding literature work and the creation of more complex images.

Intended learning outcomes

The participants will be taught the skills to prepare an already purified biological complex for structure determination with the help of electron microscopy and to independently determine its structure de novo from electron microscopic data. The participants will acquire a practical understanding for the data acquisition at the electron microscope and will be able to plan and carry out a corresponding experiment with technical support in the future. The participants will further develop the following key qualifications in the course: Computer skills (insights into Linux), team skills (working in teams of 2-3 students with varying composition), communication skills (oral and written presentation of results).

Courses (type, number of weekly contact hours, language – if other than German)

P (8)

Module taught in: German or English

Method of assessment (type, scope, language – if other than German, examination offered – if not every semester, information on whether module is creditable for bonus)

a) log (20 to 30 pages) or

b) oral examination of one candidate each (20 to 30 minutes) or

c) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate) or

d) presentation (20 to 40 minutes)

Language of assessment: German and/or English

Assessment offered: Once a year, summer semester

Allocation of places

Additional information

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	laste	er's	with	1	major	Bioc	hemis	try	(2017)	
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Workload

300 h

Teaching cycle

Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Master's degree (1 major) Biochemistry (2017) Master's degree (1 major) Biochemistry (2019)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 82 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Module title Abbreviation					Abbreviation		
Functional Proteomics: Deciphering Protein Worlds o8-MBC-FPV-232-mo					08-MBC-FPV-232-m01		
Module	coord	inator		Module offered by			
holder	of the C	Chair of Biochemistry II		Chair of Biochemist	ry		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)			
5	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 semes	ster	graduate					
Content	ts						
well as nizatior	the the n, dyna or the f	eoretical basis of state-of mics and modulation of t	-the-art methods of b the proteome of euka	iomolecular mass sp ryotic cells. Emphas	Id of functional proteomics as pectrometry for the study of orga- is is placed on quantitative stra- , and signaling and proteostasis		
Intende	ed learn	ning outcomes					
vantage	es and		mass spectrometry i	methods, know a wid	ents taught. They can explain ad- de range of applications of the		
Courses	5 (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)			
V (1) + S Module	• •	t in: German or English					
Method	l of ass	s essment (type, scope, langua	ge — if other than German, e	examination offered — if no	t every semester, information on whether		
		le for bonus)					
 a) written examination (30 to 60 minutes; also multiple choice) or b) oral examination of one candidate each (30 to 60 minutes) or c) oral examination in groups of up to 3 candidates (30 to 60 minutes) or d) presentation (20 to 45 minutes) Students will be informed about the method, length and scope of the assessment prior to the course. Language of assessment: German and/or English Assessment offered: Once a year, winter semester 							
Allocati	ion of p	olaces					
Additio	nal info	ormation					
Workload							
150 h	150 h						
Teaching cycle							
Teachin	ng cycle	e: Once a year, winter sen	nester				
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)			
Module	appea	irs in					
	-	ee (1 major) Biochemistry					
		ee (1 major) Biochemistry					
Master's degree (1 major) Biochemistry (2019)							

Modul	e title				Abbreviation	
The Fu	nctiona	l Proteome: Organizatio	on, Modulation and Dy	vnamics	08-MBC-FPP-232-m	01
Modul	e coord	inator		Module offered by		
holder	of the (Chair of Biochemistry II		Chair of Biochemis	try	
ECTS Method of grading Only after succ. of			Only after succ. con	npl. of module(s)		
10	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ester	graduate	Students are highly the same semester.		mplete module o8-N	ABC-FPV in
of the s	odule ei study of	nables in-depth familiari f the proteome as well a nts. The focus is on func	s its organization, dyn	amics and modulat	ion within the frame	work of prac-
thods i	includir	ng bioinformatic data an	alysis, visualization a	nd evaluation of the	obtained results.	
Intend	ed lear	ning outcomes				
critical	ly reflec	ting in the module, stud ct on the experiments ca te manner.				
Course	S (type, r	number of weekly contact hours,	language — if other than Ger	rman)		
Ü (6) Modul	e taugh	t in: German or English				
		s essment (type, scope, langu le for bonus)	age — if other than German, o	examination offered — if n	ot every semester, informat	ion on whether
c) oral d) pres Studer Langua	examin sentatio nts will l age of a	ation of one candidate of ation in groups of up to n (20 to 45 minutes) be informed about the m ssessment: German and ffered: Once a year, wint	3 candidates (approx nethod, length and sco l/or English	. 30 to 60 minutes) (e.
	tion of p					
12 Should the nu	l the nu mber of	mber of applications ex subject semesters. Amo ot. A waiting list will be r	ong applicants with th	e same number of s	ubject semesters, pl	aces will be
Additio	onal inf	ormation				
Worklo	ad					
300 h						
Teachi	ng cycl	e				
	ng cycle	e: Once a year, winter se	mester			
Teachi		IPOL (avamination regulation	ns for teaching-degree progra	mmes)		
	ed to in					
	ed to in					
Referre	ed to in e appea					
Referro Modulo Master Master	e appea 's degra		y (2015) y (2017)			

Module title					Abbreviation	
Biophy	sics an	d Molecular Biotechnol	ogy		07-MS2BT-152-m01	
Module	e coord	inator		Module offered by		
holder	of the (Chair of Biotechnology a	nd Biophysics	Faculty of Biology		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
10	nume	rical grade				
Duratio	n	Module level	Other prerequisites	;		
1 seme	ster	graduate				
Conten	Contents					
ture dis moves single r physiol dynami	on to d nolecu logy, io ic micro		f thermodynamics, ki nods that facilitate the nanipulation and diele	netics and molecular e investigation of ind ectric spectroscopy o	r interactions. The co ividual cells down to f cells, biomembran	ourse then the level of es, electro-
		ning outcomes				
enable where r	them t necess	have acquired a knowled o independently review ary, will be able to indep	relevant literature. In pendently acquaint the	addition, they will ha emselves with - biop	ave become acquain	ted with - or,
		number of weekly contact hours,	language — if other than Ge	rman)		
V (2) + 1 Module		t in: English				
		Sessment (type, scope, langu le for bonus)	age — if other than German,	examination offered — if no	t every semester, informati	on on whether
c) oral e d) oral Studen	examin examir ts will	mination (30 to 60 minu ation of one candidate e nation in groups of up to be informed about the m ssessment: German and	each (30 to 60 minute 3 candidates (30 to 6 nethod, length and sc	s) or o minutes)		2.
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
300 h						
Teachir	ng cvcl	e	_			
	<u> </u>					
Referre	d to in	LPO I (examination regulation	ns for teaching-degree progra	ammes)		
Module appears in						
Master's degree (1 major) Biochemistry (2015)						
Master's degree (1 major) Biology (2015)						
Master's degree (1 major) FOKUS Life Sciences (2015)						
Master's degree (1 major) Biosciences (2016) Master's teaching degree Gympasium MINT Teacher Education PLUS, Elite Network Bayaria (ENB) (2016)						
	Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)					
		ee (1 major) Biosciences			5) (2010)	
	-	r Biochemistry (2017)	JMU Würzburg	g • generated 19-Apr-2025 • e Master (120 ECTS) Biochemie		page 85 / 192

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Master's degree (1 major) Biochemistry (2017) Master's degree (1 major) Biosciences (2018) Master's degree (1 major) Biochemistry (2019) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Biosciences (2021) exchange program Biosciences (2022) Master's degree (1 major) Biosciences (2023) Master's degree (1 major) Biosciences (2024) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Master's degree (1 major) FOKUS Life Sciences (2025)

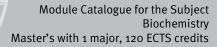
Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 86 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Module title					Abbreviation	
Literati	ure sen	ninar 1			08-MBC-LIT1-152-m01	
Module	e coord	inator		Module offered by		
chairperson of examination committee Biochemie mistry)			Biochemie (Bioche-	Chair of Biochemist	try	
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
presen [®] sions o	tations f the re	on those publications to	their classmates. Th tact the module coor	ose presentations w	in the life sciences and deliver ill be followed by critical discus- o find out if you can use this mo-	
Intende	ed lear	ning outcomes				
	d of the				biochemistry-related literature in and discussion of scientific in-	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
S (2) Module	e taugh	t in: German or English				
		eessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
		20 to 40 minutes) ssessment: German and,	/or English			
Allocat	ion of p	olaces				
Additio	onal inf	ormation				
	-					
Worklo	ad					
150 h						
Teachi	ng cycl	е	,			
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
	-	ee (1 major) Biochemistry				
	-	ee (1 major) Biochemistry				
Master	Master's degree (1 major) Biochemistry (2019)					



Module title					Abbreviation	
Single	Cell Bio	blogy			03-98-SCB-192-mo	1
Module	coord	inator		Module offered by		
Helmhc burg	ltz Inst	titute of RNA-based Infe	ction Research Würz-	Faculty of Medicine		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duration Module level Other prerequisites						
1 semes	ster	graduate				
Conten	Contents					
an intro gle cell Practica	ductio biolog al comp	l Biology course is at the n of the most recent tec y across the medical fie ponents will allow the st	hnologies for single co ld (cancer, immunolog	ell analysis and an oʻ gy, cardiovascular dis	verview of the applic seases, and infectio	cation of sin- us diseases).
Intende	d lear	ning outcomes	-			
apply b	asic pr	amiliar with fundament ocedures to analyze sin s for medical diagnostic	gle cell data sets. The	y recognize the signi		
Courses	5 (type, n	umber of weekly contact hours,	language — if other than Ger	rman)		
V (1,5) + Module		;) t in: English				
Method	l of ass	essment (type, scope, langu	age — if other than German, o	examination offered — if no	t every semester, informati	ion on whether
module is	creditab	le for bonus)				
	ge of a	nation (approx. 60 minu ssessment: English bonus	tes)			
Allocati	ion of p	olaces				
M.Sc.Bi M.Sc. B M.Sc. B Selectio	iochen iowis:	n: 15				
Additio	nal infe	ormation				
Worklo	ad					
150 h						
Teachir	ig cycl	9				
Referre	d to in	LPO I (examination regulatio	ns for teaching-degree progra	mmes)		
Module appears in						
Master's degree (1 major) Biochemistry (2017) Master's degree (1 major) Biomedicine (2018) Master's degree (1 major) Biosciences (2018) Master's degree (1 major) Biosciences (2019) Master's degree (1 major) Biosciences (2021) exchange program Biosciences (2022) Master's degree (1 major) Biosciences (2023) Master's with 1 major Biochemistry (2017) MU Würzburg • generated 19-Apr-2025 • exam. reg. page 88 / 192						
	·		-	Master (120 ECTS) Biochemie	-	

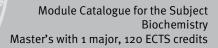




Master's degree (1 major) Biosciences (2024)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 89 / 192
	data record Master (120 ECTS) Biochemie - 2017	





Compulsory Electives 2

(40 ECTS credits)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 90 / 192
	data record Master (120 ECTS) Biochemie - 2017	1



Focus Expert Key Qualifications (practice oriented)

(40 ECTS credits)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	nago 01 / 102
master s with I major biothemistry (2017)	Jillo wurzburg • generateu 19-Api-2025 • exam. reg.	page 91 / 192
	data record Master (120 ECTS) Biochemie - 2017	



Subfield Research oriented Projects

(30 ECTS credits)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 92 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Module title					Abbreviation	
Practic	al cour	se - abroad 1			08-MBC-AP1-152-m01	
Modul	e coord	inator		Module offered by		
chairperson of examination committee Biochemie (Bioche- mistry)			Biochemie (Bioche-	Chair of Biochemist	ry	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
30	(not) s	successfully completed				
Duratio	on	Module level	Other prerequisites			
1-2 sen	nester	graduate				
Conter	nts					
change course	e progra offerec	mmes such as Erasmus	etc. The contents of t ster's programme in [he course should co	this course in the context of ex- rrespond to the contents of a lab CTS credits); please consult with	
Intend	ed lear	ning outcomes				
		amiliar with procedures a subject-specific skills as			ntries other than Germany. They s.	
Course	S (type, r	umber of weekly contact hours, l	anguage — if other than Ger	man)		
No cou	irses as	signed to module				
		s essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
b) oral c) oral d) pres	examir examin sentatio	. 20 pages) or ation of one candidate e ation in groups (groups c n/talk (approx. 15 to 30 r ssessment: German or Er	of 2: approx. 30 minu ninutes)		prox. 40 minutes) or	
Allocat	tion of p	olaces				
Additio	onal inf	ormation	-			
Duratio	on of pr	actical course: no less th	an 15 weeks.			
Worklo	ad					
900 h						
Teachi	ng cycl	e				
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
	Module appears in					
	-	ee (1 major) Biochemistry				
	-	ee (1 major) Biochemistry ee (1 major) Biochemistry				

Modul	e title				Abbreviation
Practio	cal cour	se - abroad 2			08-MBC-AP2-152-m01
Modul	e coord	inator		Module offered by	
chairp mistry		f examination committee	Biochemie (Bioche-	Chair of Biochemis	try
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
15	(not)	successfully completed			
Durati	on	Module level	Other prerequisites		
1 seme	ester	graduate			
Conte	nts				
chang course the co	e progra e offered mpeten	ammes such as Erasmus I in the context of the Ma t coordinator in advance	etc. The contents of t ster's programme in	he course should co	e this course in the context of ex- rrespond to the contents of a lab CTS credits); please consult with
		ning outcomes			
		familiar with procedures a I subject-specific skills as			Intries other than Germany. They ls.
Course	es (type, r	number of weekly contact hours, I	anguage — if other than Ger	rman)	
Νο coι	urses as	signed to module			
		Sessment (type, scope, langua le for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether
b) oral c) oral d) pres	examir examir sentatic	. 20 pages) or nation of one candidate e nation in groups (groups o n/talk (approx. 15 to 30 n ssessment: German or E	of 2: approx. 30 minu minutes)		prox. 40 minutes) or
Alloca	tion of	places			
Additi	onal inf	ormation			
Durati	on of pr	actical course: no less th	an 8 weeks.		
Workl	oad				
450 h					
Teachi	ing cycl	e			
Referr	ed to in	LPO I (examination regulation	s for teaching-degree progra	immes)	
Modul	e appea	ars in			
	-	ee (1 major) Biochemistry	-		
	-	ee (1 major) Biochemistry			
Maste	r's degr	ee (1 major) Biochemistry	/ (2019)		

Modul	e title				Abbreviation
Practic	al cour	se - external 1			08-MBC-EP1-152-m01
Modul	e coord	inator		Module offered by	<u>.</u>
chairperson of examination committee Biochemie (Bioche- mistry)			Biochemie (Bioche-	Chair of Biochemis	try
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
15	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ester	graduate			
Conter	nts				
be det course the cor	ermined offered mpeten	d by the host institution. I in the context of the Ma t coordinator in advance	The contents of the p ster's programme in	lacement should co	ion or a business. Contents to rrespond to the contents of a lab CTS credits); please consult with
	-	ning outcomes			
		e become familiar with th ualify them to work in the		niversity research in	stitutions and have developed
Course	es (type, r	number of weekly contact hours,	anguage — if other than Ge	rman)	
No cou	irses as	signed to module			
		sessment (type, scope, langua le for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether
b) oral c) oral d) pres	examir examin sentatio	. 20 pages) or nation of one candidate e ation in groups (groups o n/talk (approx. 15 to 30 p ssessment: German or E	of 2: approx. 30 minu minutes)		prox. 40 minutes) or
Allocat	tion of p	olaces			
Additio	onal inf	ormation			
Duratio	on of pr	actical course: no less th	an 8 weeks.		
Worklo	pad				
450 h	1				
Teachi	ng cycl	е			
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	ummes)	
Modul	e appea	ars in			
	-	ee (1 major) Biochemistry			
	•	ee (1 major) Biochemistry			
Master	r's degr	ee (1 major) Biochemistry	/ (2019)		

Module	e title				Abbreviation
Practic	al cour	se - external 2			08-MBC-EP2-152-m01
Module	e coord	inator		Module offered by	l
chairpe mistry)		f examination committee	Biochemie (Bioche-	Chair of Biochemis	try
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
15	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	Its				
be dete course the cor	ermined offered npeten	d by the host institution. I in the context of the Ma t coordinator in advance.	The contents of the p ster's programme in	lacement should co	ion or a business. Contents to rrespond to the contents of a lab CTS credits); please consult with
	-	ning outcomes			
		e become familiar with th ualify them to work in the		niversity research in	stitutions and have developed
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ge	rman)	
No cou	rses as	signed to module	-		
		sessment (type, scope, langua le for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether
b) oral c) oral d) pres	examir examin entatio	. 20 pages) or nation of one candidate e ation in groups (groups o n/talk (approx. 15 to 30 i ssessment: German or E	of 2: approx. 30 minu minutes)		prox. 40 minutes) or
Allocat	ion of _l	olaces			
Additio	onal inf	ormation			
Duratio	on of pr	actical course: no less th	an 8 weeks.		
Worklo	ad				
450 h					
Teachi	ng cycl	e			
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	ammes)	
Module	e appea	urs in			
		ee (1 major) Biochemistry	/ (2015)		
	-	ee (1 major) Biochemistry			
Master	's degr	ee (1 major) Biochemistry	/ (2019)		



Module title					Abbreviation			
Practical lab course 1					08-MBC-LP1-152-m01			
Module	e coord	inator		Module offered by				
chairpe mistry)		f examination committee	Biochemie (Bioche-	Chair of Biochemist	ry			
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)				
15	(not) s	successfully completed						
Duratio	on	Module level	Other prerequisites					
1 seme	ster	graduate						
Conten	ts							
burg. P ves stu	lease c dents t	onsult with the competer	nt coordinator in adva y engage with metho	ance regarding conte ds in biochemistry, r	oup at the University of Würz- ents to be covered. The course gi- nolecular biology and/or bioin- eriments and findings.			
Intend	ed lear	ning outcomes						
ty to ap	oply the arned	ose methods to new prob	lems and to determin	e whether they are s	s. They have developed the abili- suitable for those problems. They gs according to best scientific			
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)				
No cou	rses as	signed to module						
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether			
b) oral c) oral d) pres	examir examin entatio	. 20 pages) or nation of one candidate e nation in groups (groups c n/talk (approx. 15 to 30 r ssessment: German or Er	of 2: approx. 30 minu ninutes)		orox. 40 minutes) or			
Allocat	ion of _l	olaces						
Additio	onal inf	ormation						
Duratio	on of pr	actical course: no less th	an 8 weeks.					
Worklo	ad							
450 h								
Teachi	ng cycl	e						
Referre	ed to in	LPO I (examination regulations	s for teaching-degree progra	mmes)				
Module								
	-	ee (1 major) Biochemistry ee (1 major) Biochemistry						
	-	ee (1 major) Biochemistry ee (1 major) Biochemistry						



Module title				Abbreviation				
Practical lab course 2					08-MBC-LP2-152-m01			
Module	e coord	inator		Module offered by				
chairpe mistry)		f examination committee	Biochemie (Bioche-	Chair of Biochemist	try			
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)				
15	(not) s	successfully completed						
Duratio	on	Module level	Other prerequisites					
1 seme	ster	graduate						
Conten	ts							
burg. P ves stu	lease c dents t	onsult with the competer	nt coordinator in adva y engage with metho	ance regarding conte ds in biochemistry, r	oup at the University of Würz- ents to be covered. The course gi- nolecular biology and/or bioin- eriments and findings.			
Intend	ed lear	ning outcomes						
ty to ap	oply the earned l	se methods to new prob	lems and to determin	e whether they are s	s. They have developed the abili- suitable for those problems. They ogs according to best scientific			
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)				
No cou	rses as	signed to module						
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether			
b) oral c) oral d) pres	examir examin entatio	. 20 pages) or lation of one candidate e ation in groups (groups c n/talk (approx. 15 to 30 r ssessment: German or Er	of 2: approx. 30 minu ninutes)		prox. 40 minutes) or			
Allocat	ion of p	olaces						
Additio	onal inf	ormation						
Duratio	on of pr	actical course: no less th	an 8 weeks.					
Worklo	ad							
450 h								
Teachi	ng cycl	e						
Referre	ed to in	LPO I (examination regulations	s for teaching-degree progra	mmes)				
Module								
	-	ee (1 major) Biochemistry						
	-	ee (1 major) Biochemistry						
master	Master's degree (1 major) Biochemistry (2019)							



Module title					Abbreviation			
Practical lab course 3					08-MBC-LP3-152-m01			
Module	e coord	inator		Module offered by				
chairpe mistry)		f examination committee	Biochemie (Bioche-	Chair of Biochemist	ry			
ECTS	Meth	od of grading	Only after succ. com	pl. of module(s)				
10	(not)	successfully completed						
Duratio	on	Module level	Other prerequisites					
1 seme	ster	graduate						
Conten	ts							
burg. P ves stu	lease d dents t	onsult with the competer	nt coordinator in adva y engage with metho	ance regarding conte ds in biochemistry, n	oup at the University of Würz- ents to be covered. The course gi- nolecular biology and/or bioin- eriments and findings.			
Intend	ed lear	ning outcomes						
ty to ap	oply the arned	ose methods to new prob	lems and to determin	e whether they are s	s. They have developed the abili- suitable for those problems. They gs according to best scientific			
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)				
No cou	rses as	signed to module						
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether			
b) oral c) oral d) pres	examir examin entatio	. 20 pages) or nation of one candidate e nation in groups (groups c n/talk (approx. 15 to 30 r ssessment: German or Er	of 2: approx. 30 minu ninutes)		orox. 40 minutes) or			
Allocat	ion of _l	olaces						
Additio	onal inf	ormation						
Duratio	on of pr	actical course: no less th	an 6 weeks.					
Worklo	ad							
300 h	-							
Teachi	ng cycl	e						
Referre	ed to in	LPO I (examination regulations	s for teaching-degree progra	mmes)				
Module								
	-	ee (1 major) Biochemistry						
	-	ee (1 major) Biochemistry ee (1 major) Biochemistry						
master	Master's degree (1 major) Biochemistry (2019)							



Module title					Abbreviation			
Practical lab course 4					08-MBC-LP4-152-m01			
Module	e coord	inator		Module offered by				
chairpe mistry)		f examination committee	Biochemie (Bioche-	Chair of Biochemist	ry			
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)				
10	(not) s	successfully completed						
Duratio	on	Module level	Other prerequisites					
1 seme	ster	graduate						
Conten	ts							
burg. P ves stu	lease c dents t	onsult with the competer	nt coordinator in adva y engage with metho	ance regarding conte ds in biochemistry, r	oup at the University of Würz- ents to be covered. The course gi- nolecular biology and/or bioin- eriments and findings.			
Intend	ed lear	ning outcomes						
ty to ap	oply the arned	ose methods to new prob	lems and to determin	e whether they are s	s. They have developed the abili- suitable for those problems. They gs according to best scientific			
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)				
No cou	rses as	signed to module						
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether			
b) oral c) oral d) pres	examir examin entatio	. 20 pages) or nation of one candidate e nation in groups (groups c n/talk (approx. 15 to 30 r ssessment: German or Er	of 2: approx. 30 minu ninutes)		orox. 40 minutes) or			
Allocat	ion of _l	olaces						
Additio	onal inf	ormation						
Duratio	on of pr	actical course: no less th	an 6 weeks.					
Worklo	ad							
300 h								
Teachi	ng cycl	e						
Referre	ed to in	LPO I (examination regulations	s for teaching-degree progra	mmes)				
Module								
	-	ee (1 major) Biochemistry ee (1 major) Biochemistry						
	-	ee (1 major) Biochemistry ee (1 major) Biochemistry						



Module title					Abbreviation			
Practical lab course 5					08-MBC-LP5-152-m01			
Module	e coord	inator		Module offered by				
chairpe mistry)		f examination committee	Biochemie (Bioche-	Chair of Biochemist	ry			
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)				
5	(not) s	successfully completed						
Duratio	on	Module level	Other prerequisites					
1 seme	ster	graduate						
Conten	ts							
burg. P ves stu	lease c dents t	onsult with the competer	nt coordinator in adva y engage with metho	ance regarding conte ds in biochemistry, r	oup at the University of Würz- ents to be covered. The course gi- nolecular biology and/or bioin- eriments and findings.			
Intend	ed lear	ning outcomes						
ty to ap	oply the arned	ose methods to new prob	lems and to determin	e whether they are s	s. They have developed the abili- suitable for those problems. They gs according to best scientific			
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)				
No cou	rses as	signed to module						
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether			
b) oral c) oral d) pres	examir examin entatio	. 20 pages) or nation of one candidate e nation in groups (groups c n/talk (approx. 15 to 30 r ssessment: German or Er	of 2: approx. 30 minu ninutes)		orox. 40 minutes) or			
Allocat	ion of _l	olaces						
Additio	onal inf	ormation						
Duratio	on of pr	actical course: no less th	an 3 weeks.					
Worklo	ad							
150 h								
Teachi	ng cycl	e						
Referre	ed to in	LPO I (examination regulations	s for teaching-degree progra	mmes)				
Module								
	-	ee (1 major) Biochemistry						
	-	ee (1 major) Biochemistry ee (1 maior) Biochemistry						
musici	Master's degree (1 major) Biochemistry (2019)							

Modul	e title				Abbreviation
Practical lab course 6					08-MBC-LP6-152-m01
Modul	e coord	inator		Module offered by	
chairp mistry)		f examination committee	Biochemie (Bioche-	Chair of Biochemist	try
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)	
5	(not) s	successfully completed			
Durati	on	Module level	Other prerequisites		
1 seme	ester	graduate			
Conter	nts				
burg. F ves stu	lease c idents t	onsult with the competer	nt coordinator in adva y engage with metho	ance regarding conte ds in biochemistry, r	oup at the University of Würz- ents to be covered. The course gi- nolecular biology and/or bioin- eriments and findings.
Intend	ed lear	ning outcomes			
ty to a	oply the earned	ose methods to new prob	lems and to determin	e whether they are s	s. They have developed the abili- suitable for those problems. They ags according to best scientific
Course	es (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
Νο cou	irses as	signed to module			
		Sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
b) oral c) oral d) pres	examir examin sentatio	. 20 pages) or nation of one candidate e nation in groups (groups c n/talk (approx. 15 to 30 r ssessment: German or Er	of 2: approx. 30 minu ninutes)		prox. 40 minutes) or
Alloca	tion of _l	olaces			
Additio	onal inf	ormation			
Duratio	on of pr	actical course: no less th	an 3 weeks.		
Worklo	ad				
150 h					
Teachi	ng cycl	e			
Referre	ed to in	LPO I (examination regulations	s for teaching-degree progra	mmes)	
	e appea				
	-	ee (1 major) Biochemistry			
	-	ee (1 major) Biochemistry ee (1 major) Biochemistry			
		······································	x//		

Module	title				Abbreviation
Scienti	fic lect	uring M2			08-MBC-WR2-152-m01
Module	coord	inator		Module offered by	
chairpe mistry)	erson o	f examination committee	Biochemie (Bioche-	Chair of Biochemis	try
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
5	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
		ives students the opport I Pharmacy and learn hov			lecture offered by the Faculty of priate manner.
Intende	ed lear	ning outcomes			
Studen needs.	ts are a	able to teach students in	earlier stages of thei	r degrees and tailor	their teaching to those students'
Course	S (type, r	umber of weekly contact hours, l	anguage — if other than Ger	rman)	
No cou	rses as	signed to module			
		eessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether
sessme	ent to b	supervising study group e specified at the beginn ssessment: German or El	ing of the course)	successfully comple	ted (type and length of as-
Allocat			0		
Additio	nal inf	ormation			
Worklo	ad				
150 h					
Teachir	ıg cycl	e			
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)	
		-	• • •		
Module	appea	irs in			
		ee (1 major) Biochemistry	/ (2015)		
	0	ee (1 major) Biochemistry			
Master	s degr	ee (1 major) Biochemistry	(2019)		

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 103 / 192
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Module	e title				Abbreviation
Assistance in practical courses 2					08-MBC-AWA2-152-m01
Module	Module coordinator			Module offered by	
chairpe mistry)		f examination committee	Biochemie (Bioche-	Chair of Biochemis	try
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	(not)	successfully completed			
Duratio	on .	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
manne Intende Studen	r and in ed lear its are a	nstruct others in the lab. ning outcomes able to guide students in	earlier stages of thei	·	se experiments in a responsible ractical experiments and have
		o instruct others in the la			
		number of weekly contact hours, I	anguage — if other than Ger	rman)	
No cou	rses as	signed to module			
		Sessment (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if n	ot every semester, information on whether
sessme	ent to b	supervising student lab se specified at the beginn ssessment: German or E	ing of the course)	to be successfully	completed (type and length of as-
Allocat					
Additio	nal inf	ormation			
Worklo	ad				
150 h					
Teachi	ng cycl	e			
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	mmes)	
Module	e appea	ars in			
Master	's degr	ee (1 major) Biochemistry	/ (2015)		
	0	ee (1 major) Biochemistry			
Master	's degr	ee (1 major) Biochemistry	/ (2019)		



Biochemistry

Subfield Completive Qualifications

(10 ECTS credits)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 105 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Module title				Abbreviation			
Bioorganic Chemistry 08-SCM3-152-m01							
Module				Module offered by			
lecturer Chemis		ure "Bioorganische Che	nie" (Bioorganic	Institute of Organic	Chemistry		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)			
5	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 semes	ster	graduate					
Conten	ts						
spectro maniput the fran to enab Key con thogona ceptor i Intende The stu obtain l interact drates a S (3)	Bioorganic chemistry unites the central questions of organic chemistry, biochemistry, medicinal chemistry and spectroscopy with a focus on biomolecules. At the core of bioorganic chemistry is the synthesis and purposeful manipulation of biomolecules, such as nucleic acids, peptides, proteins, carbohydrates and lipids. This includes the framework of structure-function relationships and the fundamental understanding of biological mechanisms, to enable applications towards biomaterials, biosensing, bioimaging, clinical diagnostics and therapeutics. Key concepts covered in the course are nucleic acid chemistry, peptide chemistry, carbohydrate chemistry, bioorthogonal reactions, molecular diversity, solid-phase synthesis, molecular recognition and interactions (ligand-receptor interactions, signal transduction) Intended learning outcomes The students will have a molecular understanding of the structure and reactivity of biomolecules. The students obtain knowledge of modern synthetic methods in bioorganic chemistry and can explain principles of molecular interactions and recognition mechanisms. They can describe modern aspects of nucleic acids, proteins, carbohydrates and lipids. Courses (type, number of weekly contact hours, language – if other than German)						
b) oral e c) oral e	examin examin	nination (approx. 45 to g ation of one candidate e ation in groups of up to ssessment: German and	each (20 to 30 minute 3 candidates (15 to 30		ate)		
Allocati	ion of p	olaces					
Additio	nal info	ormation					
Worklo	ad						
150 h							
Teachir	ng cyclo	9					
	•						
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
 Module	 Module appears in						
Master's degree (1 major) Biochemistry (2015) Master's degree (1 major) Chemistry (2016) Master's degree (1 major) Functional Materials (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)							
master s Wi	urinajor	Biochemistry (2017)	-	s • generated 19-Apr-2025 • e Master (120 ECTS) Biochemie	-	page 106 / 192	

UNIVERSITÄT WÜRZBURG

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Biochemistry (2017)

Master's degree (1 major) Chemistry (2018) Master's degree (1 major) Biochemistry (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Functional Materials (2022)

Master's degree (1 major) Chemistry (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Master's degree (1 major) Functional Materials (2025)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 107 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Module title					Abbreviation	
Bioanorganic Chemistry					08-ACM2-152-m01	
Module coordinator				Module offered by		
lecturer of seminar "Anorganische Aspekte der Biochemie and Medizinischen Chemie" (Inorganic Aspects of Bioche- mistry and Medicinal Chemistry)						
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duration Module level		Other prerequisites				
1 semester		graduate				
Contents						
This module introduces students to the fundamental principles of bioinorganic chemistry (BIC). It discusses the methods of BIC, structures and effects of metalliferous enzymes and applications of BIC in the fields of diagnosis and therapy.						
Intend	ed lear	ning outcomes				
Students are able to describe the principles of, and methods in, BIC. They can explain the structure and effects of metalliferous enzymes and describe applications of BIC in biochemistry and medicine.						
Course	S (type, 1	number of weekly contact hours, l	anguage — if other than Ge	rman)		
S (3)						
			ge — if other than German,	examination offered — if no	ot every semester, information on whether	
a) written examination (approx. 45 to 90 minutes) or b) oral examination of one candidate each (20 to 30 minutes) or c) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate) Language of assessment: German and/or English						
Allocation of places						
Additio	onal inf	ormation				
Worklo	ad					
150 h						
Teachi	ng cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master's degree (1 major) Biochemistry (2015)						
Master	's degr	ee (1 major) Biochemistry	/ (2017)			

Modul	Module title Abbreviation						
Moder	Modern aspects of natural product Chemistry and Biological Chemistry o8-OCM-NAT-152-mo1						
Modul	e coord	inator		Module offered	by		
lecture	r of the	seminar		Institute of Orga	anic Chemistry		
ECTS	Metho	od of grading	Only after succ. con	1pl. of module(s))		
5	nume	rical grade					
Duratio	on	Module level	Other prerequisites				
1 seme	ester	graduate					
Conter	nts						
This m	odule d	liscusses advanced topic	s in natural product o	chemistry and bi	ological chemistry.		
Intend	ed lear	ning outcomes					
Studer	nts are a	able to discuss advanced	topics in natural pro	duct chemistry a	and biological chemistry.		
Course	S (type, r	number of weekly contact hours,	language — if other than Ger	rman)			
S (3)							
		Sessment (type, scope, langua Ile for bonus)	ge — if other than German,	examination offered –	- if not every semester, information on whether		
b) oral c) oral	examir examin	mination (approx. 45 to 9 nation of one candidate e ation in groups of up to 3 ssessment: German and	ach (20 to 30 minute 3 candidates (15 to 30		ndidate)		
	tion of p						
mester	rs. Amo		me number of subject	ct semesters, pla	ording to the number of subject se- aces will be allocated by lot. A waiting ble.		
Additio	onal inf	ormation					
Worklo	bad						
150 h							
Teaching cycle							
Referred to in LPO I (examination regulations for teaching-degree programmes)							
Module appears in							
	-	ee (1 major) Biochemistr					
Master	's degr	ee (1 major) Biochemistr	y (2017)				

Module title 4				Abbreviation		
Organo- and Biocatalysis 08-HKM1-152-m01						
Module	e coord	inator		Module offered by		
lecture	r of the	seminar "Organo- and	Biokatalyse"	Faculty of Chemistr	y and Pharmacy	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
process	ses. Or plicatio	rovides students with o ganocatalysis: enantios on areas. Biocatalysis: e	selective implementati	on, principles, green	chemistry, substand	ce classes
Intende	ed lear	ning outcomes				
scribe t	he stru	able to categorise orgar icture and applications ne effects of enzymes.				
Course	S (type, r	umber of weekly contact hours	, language — if other than Ge	rman)		
S (3)						
		s essment (type, scope, lang le for bonus)	uage — if other than German,	examination offered — if no	t every semester, informati	ion on whether
b) oral (c) oral (examir examin	nination (approx. 45 to ation of one candidate ation in groups of up to ssessment: German an	each (20 to 30 minute 3 candidates (15 to 30		late)	
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
150 h						
Teachir	ıg cycl	e				
Referre	d to in	LPO I (examination regulation	ons for teaching-degree progra	ammes)		
Module appears in						
Master's degree (1 major) Biochemistry (2015) Master's degree (1 major) Chemistry (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Master's degree (1 major) Biochemistry (2017) Master's degree (1 major) Chemistry (2018) Master's degree (1 major) Biochemistry (2019) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Chemistry (2024)						
Master's wi	th 1 majo	Biochemistry (2017)		g • generated 19-Apr-2025 • e Master (120 ECTS) Biochemie	-	page 110 / 192



Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 111 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Module title				Abbreviation		
Bioinformatics					07-MS2BI-152-m01	
Module	e coord	inator		Module offered by		
holder	of the (Chair of Bioinformatics		Faculty of Biology		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
10	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten						
and see	quence	l current results of bioir analysis, protein doma eomics data), analysis	ains and protein famili	es, large-scale data a	analysis (e. g. net ge	
Intende	ed lear	ning outcomes				
		ecent results in bioinfor al technologies and res			advanced (Master)	level know-
Course	S (type, r	number of weekly contact hours	s, language — if other than Ge	rman)		
V (2) + Module		t in: German and/or En	glish			
Method	d of ass	sessment (type, scope, lang	uage — if other than German,	examination offered — if no	t every semester, informati	on on whether
module is	s creditab	le for bonus)				
c) oral (d) oral	examin examir	mination (30 to 60 minu ation of one candidate nation in groups of up to ssessment: German an	each (30 to 60 minute 3 candidates (30 to 6	s) or	or	
Allocat	ion of j	olaces				
Additio	nal inf	ormation				
Worklo	ad					
300 h						
Teachi	ng cycl	e				
	<u> </u>					
Referre	d to in	LPOI (examination regulation		mmes)		
Module appears in						
		ee (1 major) Biochemist	try (2015)			
	-	ee (1 major) Biology (20				
Master's degree (1 major) Mathematics (2016)						
Master's degree (1 major) Computational Mathematics (2016)						
Master's degree (1 major) Biosciences (2016)						
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)						
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)						
Master's degree (1 major) Biosciences (2017)						
Master's degree (1 major) Biochemistry (2017)						
	Master's degree (1 major) Biosciences (2018) Master's degree (1 major) Computational Mathematics (2019)					
master	s uegi	ee (1 major) computatio	mai mainematics (201	<i>y</i> ,		
Master's wi	ith 1 majo	r Biochemistry (2017)		g ● generated 19-Apr-2025 ● e Master (120 ECTS) Biochemie	-	page 112 / 192

Master's degree (1 major) Mathematics (2019) Master's degree (1 major) Biochemistry (2019) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Biosciences (2021) Master's degree (1 major) Computational Mathematics (2022) Master's degree (1 major) Mathematics (2022) exchange program Biosciences (2022) Master's degree (1 major) Biosciences (2023) Master's degree (1 major) Computer Science (2023) Master's degree (1 major) Biosciences (2024) Master's degree (1 major) Computational Mathematics (2024) Master's degree (1 major) Mathematics (2024) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Master's degree (1 major) Computer Science (2025)

UNIVERSITÄT

WÜRZBURG

Module title				Abbreviation			
Systems Biology					07-MS3S-152-m01		
Module	e coord	inator		Module offered by			
holder	ofthe	Chair of Bioinformatics		Faculty of Biology			
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)			
10	nume	rical grade					
Duratio	n	Module level	Other prerequisites	;			
1 seme	ster	graduate					
Conten	ts						
sults fr	om fun	l current results of com ctional genomics, dyna networks.					
Intende	ed lear	ning outcomes					
		ecent results in systems al technologies and res			an advanced (Master	r) level know-	
Course	S (type, 1	number of weekly contact hours	s, language — if other than Ge	rman)			
V (2) + Module		t in: German and/or En	glish				
		Sessment (type, scope, lang ole for bonus)	uage — if other than German,	examination offered — if no	t every semester, informati	on on whether	
c) oral (d) oral	examir examir	mination (30 to 60 min lation of one candidate lation in groups of up to ssessment: German an	each (30 to 60 minute o 3 candidates (30 to 6	s) or	or		
Allocat	ion of	places					
Additio	nal inf	ormation					
Worklo	ad						
300 h							
Teachi							
Teacini	ig tyti	e					
Referre	a to in	LPO I (examination regulation	ons for teaching-degree progra	ammes)			
Module appears in							
	-	ee (1 major) Biochemis	• -				
	Master's degree (1 major) Biology (2015)						
Master's degree (1 major) Mathematics (2016)							
Master's degree (1 major) Computational Mathematics (2016) Master's degree (1 major) Biosciences (2016)							
Master's degree (1 major) Biosciences (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)							
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2010)							
	Master's degree (1 major) Biosciences (2017)						
Master's degree (1 major) Biochemistry (2017)							
Master	's degr	ee (1 major) Bioscience	s (2018)				
Master	's degr	ee (1 major) Computatio	onal Mathematics (201	.9)			
Master's wi	ith 1 majo	r Biochemistry (2017)		g • generated 19-Apr-2025 • e Master (120 ECTS) Biochemie	-	page 114 / 192	

Master's degree (1 major) Mathematics (2019)

Master's degree (1 major) Biochemistry (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Biosciences (2021)

Master's degree (1 major) Computational Mathematics (2022)

Master's degree (1 major) Mathematics (2022)

Master's degree (1 major) Biosciences (2023)

Master's degree (1 major) Biosciences (2024)

Master's degree (1 major) Computational Mathematics (2024)

Master's degree (1 major) Mathematics (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 115 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Module title				Abbreviation		
Methods in Life Sciences					07-MLS1-152-m01	
Module coordinator			Module offered by			
degree	progra	mme coordinator Biolo	gie (Biology)	Faculty of Biology		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
10	nume	rical grade				
Duratio	on	Module level	Other prerequisites	i		
1 seme	ster	graduate				
Conten	Its					
models	s and ge	lecular techniques, lipi ene-knockout approach thods in bioinformatics	ies, protein and molec	ular biology techniqu		
Intende	ed learı	ning outcomes				
		able to review and expa nd techniques to design			techniques and are a	able to choo-
Course	S (type, n	number of weekly contact hours	s, language — if other than Ge	rman)		
V (3) Module	e taugh	t in: English				
		Sessment (type, scope, lang le for bonus)	uage — if other than German,	examination offered — if no	t every semester, informati	on on whether
d) oral Studen	examin Its will l Ige of a	ation of one candidate nation in groups of up to be informed about the ssessment: English	o 3 candidates (30 to 6	o minutes)	nt prior to the course	e.
Allocal		Jaces				
 • • • • • • •						
Additio		ormation				
 Worklo						
Worklo	au					
300 h						
Teachi	ing cycl	e				
 Deferre				``````````````````````````````````````		
Referre		LPO I (examination regulation	ons for teaching-degree progra	ammes)		
 Module appears in						
-		ee (1 major) Biochemist	ry (2015)			
Master's degree (1 major) Biology (2015)						
Master's degree (1 major) FOKUS Life Sciences (2015)						
Master's degree (1 major) Biosciences (2016)						
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)						
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)						
	Master's degree (1 major) Biosciences (2017) Master's degree (1 major) Biochemistry (2017)					
	Master's degree (1 major) Biochemistry (2017) Master's degree (1 major) Biosciences (2018)					
	-	ee (1 major) Biochemist				
	_					ı
Master's wi	ith 1 majoi	r Biochemistry (2017)		g • generated 19-Apr-2025 • e Master (120 ECTS) Biochemie	-	page 116 / 192

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Biosciences (2021)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 117 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Module title Abbreviation						
Animal science and welfare 03-VTK-152-mo1						
Modul	e coord	inator		Module offered by		
Anima	Welfar	e Officer of the University	y of Würzburg	Faculty of Medicine		
ECTS	Methe	od of grading	Only after succ. con	npl. of module(s)		
3	(not)	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	undergraduate	Regular attendance the course).	of practical course (as specified at the beginning of	
Conter	Its					
Theore mal sci		d practical basic knowle	dge of animal welfare	e legislation, animal	welfare ethics and laboratory ani-	
Intend	ed lear	ning outcomes				
Studer SA (Ca		e the expertise to carry ou	ut or participate in an	imal experiments ac	cording to the guidelines of FELA-	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ge	rman)		
V (2) +	P (1)					
		Sessment (type, scope, langua Ile for bonus)	ge — if other than German,	examination offered — if no	t every semester, information on whether	
		nation (approx. 90 minut ssessment: German and				
Allocat	ion of _l	olaces				
Additio	onal inf	ormation				
Worklo	ad					
90 h						
Teachi	ng cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master's degree (1 major) Biochemistry (2015)						
Master's degree (1 major) Biochemistry (2017)						
Master	's degr	ee (1 major) Biochemistry	/ (2019)			

Module title					Abbreviation	
Scientific lecturing M1					08-MBC-WR1-152-m01	
Module	e coord	inator		Module offered by		
chairpe mistry)	erson o	f examination committee	Biochemie (Bioche-	Chair of Biochemis	try	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
5	(not)	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
		gives students the opport d Pharmacy and learn hov			lecture offered by the Faculty of priate manner.	
Intende	ed lear	ning outcomes				
Studen needs.	ts are a	able to teach students in	earlier stages of thei	r degrees and tailor	their teaching to those students'	
Course	S (type, 1	number of weekly contact hours, l	anguage — if other than Gei	rman)		
T (o)						
		s essment (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
		l supervising study group issessment: German and,		prox. 2 pages)		
Allocat	ion of	places				
Additio	nal inf	ormation				
Worklo	ad					
150 h						
Teachi	ng cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master's degree (1 major) Biochemistry (2015)						
Master's degree (1 major) Biochemistry (2017)						
Master	's degr	ee (1 major) Biochemistry	(2019)			

Module title Abbreviation						
Assistance in practical courses 1					08-MBC-AWA1-152-m01	
Module	e coord	inator		Module offered by	1	
chairpe mistry)	erson of	f examination committee	Biochemie (Bioche-	Chair of Biochemis	try	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
tical ex	perime				of their degrees through a prac- e experiments in a responsible	
Intende	ed learı	ning outcomes				
		able to guide students in o instruct others in the la		r degrees through pi	ractical experiments and have	
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	rman)		
T (o)						
		essment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether	
		supervising student lab ssessment: German and		oort (approx. 1 page)		
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
150 h						
Teachi	ng cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master's degree (1 major) Biochemistry (2015)						
		ee (1 major) Biochemistry				
Master	's degr	ee (1 major) Biochemistry	(2019)			

Module title					Abbreviation	
Literature seminar 3					08-MBC-LIT3-152-m01	
Module	e coord	inator		Module offered by		
chairpe mistry)	erson o	f examination committee	Biochemie (Bioche-	Chair of Biochemist	try	
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
presen [®] sions o	tations f the re	on those publications to	their classmates. Th tact the module coor	ose presentations w	in the life sciences and deliver ill be followed by critical discus- to find out if you can use this mo-	
Intende	ed lear	ning outcomes				
	d of the				piochemistry-related literature in and discussion of scientific in-	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
S (2) Module	e taugh	t in: German or English				
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
		20 to 40 minutes) ssessment: German and,	/or English			
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
150 h						
Teachi	ng cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
	-	ee (1 major) Biochemistry				
	0	ee (1 major) Biochemistry	· · · ·			
Master's degree (1 major) Biochemistry (2019)						



Focus - Expert Key Qualifications

(40 ECTS credits)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 122 / 192
	data record Master (120 ECTS) Biochemie - 2017	



Subfield Research oriented Projects

(20 ECTS credits)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 123 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Module title				Abbreviation	
Practical course - abroad 1					08-MBC-AP1-152-m01
Module	e coord	inator		Module offered by	
chairpe mistry)		f examination committee	Biochemie (Bioche-	Chair of Biochemist	ry
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
30	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1-2 sen	nester	graduate			
Conten	ts		-		
change course	e progra offerec	mmes such as Erasmus	etc. The contents of t ster's programme in I	he course should co	this course in the context of ex- rrespond to the contents of a lab CTS credits); please consult with
Intend	ed lear	ning outcomes			
		amiliar with procedures a subject-specific skills as			ntries other than Germany. They s.
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
No cou	rses as	signed to module			
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
b) oral c) oral d) pres	examir examin entatio	. 20 pages) or nation of one candidate e ation in groups (groups c n/talk (approx. 15 to 30 r ssessment: German or El	of 2: approx. 30 minu minutes)		prox. 40 minutes) or
Allocat	ion of p	olaces			
Additio	onal inf	ormation			
Duratio	on of pr	actical course: no less th	an 15 weeks.		
Worklo	ad				
900 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
	-	ee (1 major) Biochemistry ee (1 major) Biochemistry	-		
	-	ee (1 major) Biochemistry			
master's degree (1 major) breenembry (2013)					

Module title					Abbreviation	
Practical course - abroad 2 o8-MBC-AP2-152-mo1					08-MBC-AP2-152-m01	
Modul	e coord	inator		Module offered by	I	
chairp mistry)		f examination committee	Biochemie (Bioche-	Chair of Biochemis	try	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
15	(not)	successfully completed				
Durati	on	Module level	Other prerequisites			
1 seme	ester	graduate				
Conter	nts					
change course the co	e progra offered mpeten	ammes such as Erasmus I in the context of the Ma t coordinator in advance	etc. The contents of t ster's programme in	he course should co	e this course in the context of ex- rrespond to the contents of a lab CTS credits); please consult with	
	-	ning outcomes				
		amiliar with procedures I subject-specific skills a			Intries other than Germany. They ls.	
Course	es (type, r	number of weekly contact hours,	language — if other than Gei	rman)		
Νο ςοι	irses as	signed to module				
		sessment (type, scope, langua le for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
b) oral c) oral d) pres	examir examin sentatio	. 20 pages) or nation of one candidate e nation in groups (groups o n/talk (approx. 15 to 30 i ssessment: German or E	of 2: approx. 30 minu minutes)		prox. 40 minutes) or	
Alloca	tion of _l	olaces				
Additi	onal inf	ormation				
Duratio	on of pr	actical course: no less th	an 8 weeks.			
Worklo	oad					
450 h						
Teachi	ng cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
	Master's degree (1 major) Biochemistry (2015)					
	•	ee (1 major) Biochemistry				
Maste	r's degr	ee (1 major) Biochemistry	(2019)			

Module title					Abbreviation
Practic	al cour	se - external 1			08-MBC-EP1-152-m01
Modul	e coord	inator		Module offered by	<u>.</u>
chairp mistry)		f examination committee	Biochemie (Bioche-	Chair of Biochemis	try
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
15	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ester	graduate			
Conter	nts				
be det course the cor	ermined offered mpeten	d by the host institution. I in the context of the Ma t coordinator in advance	The contents of the p ster's programme in	lacement should co	ion or a business. Contents to rrespond to the contents of a lab CTS credits); please consult with
	-	ning outcomes			
		e become familiar with th ualify them to work in the		niversity research in	stitutions and have developed
Course	es (type, r	number of weekly contact hours,	anguage — if other than Ge	rman)	
No cou	irses as	signed to module			
		sessment (type, scope, langua le for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether
b) oral c) oral d) pres	examir examin sentatio	. 20 pages) or nation of one candidate e ation in groups (groups o n/talk (approx. 15 to 30 p ssessment: German or E	of 2: approx. 30 minu minutes)		prox. 40 minutes) or
Allocat	tion of p	olaces			
Additio	onal inf	ormation			
Duratio	on of pr	actical course: no less th	an 8 weeks.		
Worklo	pad				
450 h	1				
Teachi	ng cycl	е			
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Modul	e appea	ars in			
	-	ee (1 major) Biochemistry			
	•	ee (1 major) Biochemistry			
Master	r's degr	ee (1 major) Biochemistry	/ (2019)		

Module title					Abbreviation
Practic	al cour	se - external 2			08-MBC-EP2-152-m01
Module	e coord	inator		Module offered by	l
chairpe mistry)		f examination committee	Biochemie (Bioche-	Chair of Biochemis	try
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
15	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	Its				
be dete course the cor	ermined offered npeten	d by the host institution. I in the context of the Ma t coordinator in advance.	The contents of the p ster's programme in	lacement should co	ion or a business. Contents to rrespond to the contents of a lab CTS credits); please consult with
	-	ning outcomes			
		e become familiar with th ualify them to work in the		niversity research in	stitutions and have developed
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ge	rman)	
No cou	rses as	signed to module	-		
		sessment (type, scope, langua le for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether
b) oral c) oral d) pres	examir examin entatio	. 20 pages) or nation of one candidate e ation in groups (groups o n/talk (approx. 15 to 30 i ssessment: German or E	of 2: approx. 30 minu minutes)		prox. 40 minutes) or
Allocat	ion of _l	olaces			
Additio	onal inf	ormation			
Duratio	on of pr	actical course: no less th	an 8 weeks.		
Worklo	ad				
450 h					
Teachi	ng cycl	e			
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	e appea	urs in			
		ee (1 major) Biochemistry	/ (2015)		
	-	ee (1 major) Biochemistry			
Master	's degr	ee (1 major) Biochemistry	/ (2019)		



Module title				Abbreviation		
Practical lab course 1					08-MBC-LP1-152-m01	
Module	e coord	inator		Module offered by		
chairpe mistry)		f examination committee	Biochemie (Bioche-	Chair of Biochemist	ry	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
15	(not) s	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
burg. P ves stu	lease c dents t	onsult with the competer	nt coordinator in adva y engage with metho	ance regarding conte ds in biochemistry, r	oup at the University of Würz- ents to be covered. The course gi- nolecular biology and/or bioin- eriments and findings.	
Intend	ed lear	ning outcomes				
ty to ap	oply the arned	ose methods to new prob	lems and to determin	e whether they are s	s. They have developed the abili- uitable for those problems. They gs according to best scientific	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
No cou	rses as	signed to module				
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
b) oral c) oral d) pres	examir examin entatio	. 20 pages) or nation of one candidate e nation in groups (groups c n/talk (approx. 15 to 30 r ssessment: German or Er	of 2: approx. 30 minu ninutes)		rox. 40 minutes) or	
Allocat	ion of _l	olaces				
Additio	onal inf	ormation				
Duratio	on of pr	actical course: no less th	an 8 weeks.			
Worklo	ad					
450 h						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
	Master's degree (1 major) Biochemistry (2015)					
	-	ee (1 major) Biochemistry ee (1 major) Biochemistry				
mastel	Master's degree (1 major) Biochemistry (2019)					



Module title				Abbreviation	
Practical lab course 2				08-MBC-LP2-152-m01	
Module	e coord	inator		Module offered by	
chairpe mistry)		f examination committee	Biochemie (Bioche-	Chair of Biochemist	try
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
15	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	Its				
burg. P ves stu	Please c Idents t	onsult with the competer	nt coordinator in adva y engage with metho	ance regarding conte ds in biochemistry, n	oup at the University of Würz- ents to be covered. The course gi- nolecular biology and/or bioin- eriments and findings.
Intend	ed lear	ning outcomes			
ty to ap	oply the earned	ose methods to new prob	lems and to determin	e whether they are s	s. They have developed the abili- suitable for those problems. They ogs according to best scientific
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)	
No cou	rses as	signed to module			
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
b) oral c) oral d) pres	examir examin entatio	. 20 pages) or nation of one candidate e nation in groups (groups c n/talk (approx. 15 to 30 r ssessment: German or Er	of 2: approx. 30 minu ninutes)		prox. 40 minutes) or
Allocat	tion of p	olaces			
Additio	onal inf	ormation			
Duratio	on of pr	actical course: no less th	an 8 weeks.		
Worklo	ad				
450 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
	-	ee (1 major) Biochemistry ee (1 major) Biochemistry			
	-	ee (1 major) Biochemistry ee (1 major) Biochemistry			



Module title				Abbreviation	
Practical lab course 3					08-MBC-LP3-152-m01
Module	e coord	inator		Module offered by	
chairpe mistry)		f examination committee	Biochemie (Bioche-	Chair of Biochemist	ry
ECTS	Meth	od of grading	Only after succ. com	pl. of module(s)	
10	(not)	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
burg. P ves stu	lease d dents t	onsult with the competer	nt coordinator in adva y engage with metho	ance regarding conte ds in biochemistry, n	oup at the University of Würz- ents to be covered. The course gi- nolecular biology and/or bioin- eriments and findings.
Intend	ed lear	ning outcomes			
ty to ap	oply the arned	ose methods to new prob	lems and to determin	e whether they are s	s. They have developed the abili- suitable for those problems. They gs according to best scientific
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
No cou	rses as	signed to module			
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
b) oral c) oral d) pres	examir examin entatio	. 20 pages) or nation of one candidate e nation in groups (groups c n/talk (approx. 15 to 30 r ssessment: German or Er	of 2: approx. 30 minu ninutes)		orox. 40 minutes) or
Allocat	ion of _l	olaces			
Additio	onal inf	ormation			
Duratio	on of pr	actical course: no less th	an 6 weeks.		
Worklo	ad				
300 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
	-	ee (1 major) Biochemistry			
	-	ee (1 major) Biochemistry ee (1 major) Biochemistry			
Master's degree (1 major) Biochemistry (2019)					



Module title				Abbreviation	
Practical lab course 4				08-MBC-LP4-152-m01	
Module	e coord	inator		Module offered by	
chairpe mistry)		f examination committee	Biochemie (Bioche-	Chair of Biochemist	ry
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
10	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
burg. P ves stu	lease c dents t	onsult with the competer	nt coordinator in adva y engage with metho	ance regarding conte ds in biochemistry, r	oup at the University of Würz- ents to be covered. The course gi- nolecular biology and/or bioin- eriments and findings.
Intend	ed lear	ning outcomes			
ty to ap	oply the arned	ose methods to new prob	lems and to determin	e whether they are s	s. They have developed the abili- suitable for those problems. They gs according to best scientific
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
No cou	rses as	signed to module			
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
b) oral c) oral d) pres	examir examin entatio	. 20 pages) or nation of one candidate e nation in groups (groups c n/talk (approx. 15 to 30 r ssessment: German or Er	of 2: approx. 30 minu ninutes)		orox. 40 minutes) or
Allocat	ion of _l	olaces			
Additio	onal inf	ormation			
Duratio	on of pr	actical course: no less th	an 6 weeks.		
Worklo	ad				
300 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
	-	ee (1 major) Biochemistry ee (1 major) Biochemistry			
	-	ee (1 major) Biochemistry ee (1 major) Biochemistry			



Module title				Abbreviation	
Practical lab course 5					08-MBC-LP5-152-m01
Module	e coord	inator		Module offered by	
chairpe mistry)		f examination committee	Biochemie (Bioche-	Chair of Biochemist	ry
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
burg. P ves stu	lease c dents t	onsult with the competer	nt coordinator in adva y engage with metho	ance regarding conte ds in biochemistry, r	oup at the University of Würz- ents to be covered. The course gi- nolecular biology and/or bioin- eriments and findings.
Intend	ed lear	ning outcomes			
ty to ap	oply the arned	ose methods to new prob	lems and to determin	e whether they are s	s. They have developed the abili- suitable for those problems. They gs according to best scientific
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
No cou	rses as	signed to module			
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether
b) oral c) oral d) pres	examir examin entatio	. 20 pages) or nation of one candidate e nation in groups (groups c n/talk (approx. 15 to 30 r ssessment: German or Er	of 2: approx. 30 minu ninutes)		orox. 40 minutes) or
Allocat	ion of _l	olaces			
Additio	onal inf	ormation			
Duratio	on of pr	actical course: no less th	an 3 weeks.		
Worklo	ad				
150 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
	-	ee (1 major) Biochemistry			
	-	ee (1 major) Biochemistry ee (1 major) Biochemistry			

Module title				Abbreviation		
Practical lab course 6					08-MBC-LP6-152-m01	
Module	e coord	inator		Module offered by		
chairpe mistry)		f examination committee	Biochemie (Bioche-	Chair of Biochemist	try	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	(not) s	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	Its					
burg. P ves stu	Please c Idents t	onsult with the competer	nt coordinator in adva y engage with metho	ance regarding conte ds in biochemistry, r	oup at the University of Würz- ents to be covered. The course gi- nolecular biology and/or bioin- eriments and findings.	
Intend	ed lear	ning outcomes				
ty to ap	oply the earned l	ose methods to new prob	lems and to determin	e whether they are s	s. They have developed the abili- suitable for those problems. They ags according to best scientific	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
No cou	rses as	signed to module				
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
b) oral c) oral d) pres	examir examin entatio	. 20 pages) or nation of one candidate e nation in groups (groups o n/talk (approx. 15 to 30 r ssessment: German or Er	of 2: approx. 30 minu ninutes)		prox. 40 minutes) or	
Allocat	ion of p	olaces				
Additio	onal inf	ormation				
Duratio	on of pr	actical course: no less th	an 3 weeks.			
Worklo	ad					
150 h						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
	Master's degree (1 major) Biochemistry (2015) Master's degree (1 major) Biochemistry (2017)					
	-	ee (1 major) Biochemistry ee (1 major) Biochemistry				

Module	title				Abbreviation
Scienti	fic lect	uring M2			08-MBC-WR2-152-m01
Module	e coord	inator		Module offered by	<u></u>
chairperson of examination committee Biochemie (Bioche- mistry)			Biochemie (Bioche-	Chair of Biochemis	try
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
5	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
		ives students the opport I Pharmacy and learn hov			lecture offered by the Faculty of priate manner.
Intende	ed lear	ning outcomes			
Studen needs.	ts are a	able to teach students in	earlier stages of thei	r degrees and tailor	their teaching to those students'
Course	S (type, r	umber of weekly contact hours, l	anguage — if other than Ger	rman)	
No cou	rses as	signed to module			
		eessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether
sessme	ent to b	supervising study group e specified at the beginn ssessment: German or El	ing of the course)	successfully comple	ted (type and length of as-
Allocat			0		
Additio	nal inf	ormation			
Worklo	ad				
150 h					
Teachir	ıg cycl	e			
			· · · · · · · · · · · · · · · · · · ·		
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)	
Module	e appea	irs in			
		ee (1 major) Biochemistry	r (2015)		
	0	ee (1 major) Biochemistry	· //		
Master	's degr	ee (1 major) Biochemistry	(2019)		

Module	e title				Abbreviation
Assista	nce in	practical courses 2			08-MBC-AWA2-152-m01
Module	e coord	inator		Module offered by	
chairpe mistry)	erson o	f examination committee	Biochemie (Bioche-	Chair of Biochemis	try
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	(not) s	successfully completed			
Duratio	on .	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
manne Intende Studen	r and in ed lear ts are a	nstruct others in the lab. ning outcomes able to guide students in	earlier stages of thei	·	se experiments in a responsible ractical experiments and have
		o instruct others in the la			
	-	number of weekly contact hours, I	anguage — if other than Ger	rman)	
No cou	rses as	signed to module			
		Sessment (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if n	ot every semester, information on whether
sessme	ent to b	supervising student lab se specified at the beginn ssessment: German or E	ing of the course)	to be successfully	completed (type and length of as-
Allocat					
Additio	nal inf	ormation			
Worklo	ad				
150 h					
Teachi	ng cycl	e			
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	mmes)	
Module	e appea	ars in			
Master	's degr	ee (1 major) Biochemistry	/ (2015)		
	0	ee (1 major) Biochemistry			
Master	's degr	ee (1 major) Biochemistry	/ (2019)		



Module Catalogue for the Subject Biochemistry Master's with 1 major, 120 ECTS credits

Subfield Completive Qualifications

(20 ECTS credits)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 136 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Module title					Abbreviation	
Bioorga	anic Ch	emistry			08-SCM3-152-m01	
Module	e coord	inator		Module offered by		
lecture Chemis		ture "Bioorganische Chei	nie" (Bioorganic	Institute of Organic	Chemistry	
ECTS	ECTS Method of grading Only after succ. compl. of module(s)					
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	Contents					
spectro manipu the fran to enab Key con thogon ceptor i Intende The stu obtain	Bioorganic chemistry unites the central questions of organic chemistry, biochemistry, medicinal chemistry and spectroscopy with a focus on biomolecules. At the core of bioorganic chemistry is the synthesis and purposeful manipulation of biomolecules, such as nucleic acids, peptides, proteins, carbohydrates and lipids. This includes the framework of structure-function relationships and the fundamental understanding of biological mechanisms, to enable applications towards biomaterials, biosensing, bioimaging, clinical diagnostics and therapeutics. Key concepts covered in the course are nucleic acid chemistry, peptide chemistry, carbohydrate chemistry, bioor thogonal reactions, molecular diversity, solid-phase synthesis, molecular recognition and interactions (ligand-receptor interactions, signal transduction) Intended learning outcomes The students will have a molecular understanding of the structure and reactivity of biomolecules. The students obtain knowledge of modern synthetic methods in bioorganic chemistry and can explain principles of molecular					purposeful This includes mechanisms, peutics. mistry, bioor- ns (ligand-re- e students
drates a	and lip	-		·		· ·
S (3)				inany		
Method		essment (type, scope, langua le for bonus)	age — if other than German, e	examination offered — if no	t every semester, informati	on on whether
b) oral (c) oral (examin examin	nination (approx. 45 to g ation of one candidate e ation in groups of up to g ssessment: German and	each (20 to 30 minute 3 candidates (15 to 30		late)	
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
150 h						
Teachir	ng cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master's degree (1 major) Biochemistry (2015) Master's degree (1 major) Chemistry (2016) Master's degree (1 major) Functional Materials (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)						
		Biochemistry (2017)	JMU Würzburg	• generated 19-Apr-2025 • e	xam. reg.	page 137 / 192
			data record	Master (120 ECTS) Biochemie	- 201/	

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Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Biochemistry (2017)

Master's degree (1 major) Chemistry (2018) Master's degree (1 major) Biochemistry (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Functional Materials (2022)

Master's degree (1 major) Chemistry (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Master's degree (1 major) Functional Materials (2025)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 138 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Module title					Abbreviation	
Bioano	organic	Chemistry			08-ACM2-152-m01	
Modul	Module coordinator			Module offered by	I	
lecturer of seminar "Anorganische Aspekte der Biochemie and Medizinischen Chemie" (Inorganic Aspects of Bioche- mistry and Medicinal Chemistry)			Institute of Inorgan	ic Chemistry		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites	i i		
1 seme	ester	graduate				
Conter	nts					
	ds of B				chemistry (BIC). It discusses the ns of BIC in the fields of diagnosis	
Intend	ed lear	ning outcomes				
Studer	nts are a				xplain the structure and effects medicine.	
Course	S (type, 1	number of weekly contact hours, l	anguage — if other than Ge	rman)		
S (3)						
		s essment (type, scope, langua ble for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether	
b) oral c) oral	examir examir	mination (approx. 45 to 9 nation of one candidate e nation in groups of up to a ssessment: German and,	ach (20 to 30 minute 3 candidates (15 to 30		date)	
Allocat	tion of	places				
Additio	onal inf	ormation				
Worklo	ad					
150 h						
Teachi	ng cycl	e				
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Modul	e appea	ars in				
	0	ee (1 major) Biochemistry				
Master	's degr	ee (1 major) Biochemistry	(2017)			

Module title Abbreviation						
Moder	n aspec	ts of natural product Ch	emistry and Biologica	al Chemistry	08-0CM-NAT-152-m01	
Modul	e coord	inator		Module offered by		
lecturer of the seminar				Institute of Orga	anic Chemistry	
ECTS	Metho	od of grading	Only after succ. con	1pl. of module(s))	
5	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ester	graduate				
Conter	nts					
This m	odule d	liscusses advanced topic	s in natural product o	chemistry and bi	ological chemistry.	
Intend	ed lear	ning outcomes				
Studer	nts are a	able to discuss advanced	topics in natural pro	duct chemistry a	and biological chemistry.	
Course	S (type, r	number of weekly contact hours,	language — if other than Ger	rman)		
S (3)						
		Sessment (type, scope, langua Ile for bonus)	ge — if other than German,	examination offered –	- if not every semester, information on whether	
b) oral c) oral	examir examin	mination (approx. 45 to 9 nation of one candidate e ation in groups of up to 3 ssessment: German and	ach (20 to 30 minute 3 candidates (15 to 30		ndidate)	
	tion of p					
mester	rs. Amo		me number of subject	ct semesters, pla	ording to the number of subject se- aces will be allocated by lot. A waiting ble.	
Additio	onal inf	ormation				
Worklo	bad					
150 h						
Teachi	ng cycl	e				
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Modul	e appea	ars in				
	-	ee (1 major) Biochemistr				
Master	's degr	ee (1 major) Biochemistr	y (2017)			

Module	Module title				Abbreviation	
Organo	- and E	Biocatalysis			08-HKM1-152-m01	
Module	e coord	inator		Module offered by		
lecture	r of the	seminar "Organo- and	Biokatalyse"	Faculty of Chemistr	y and Pharmacy	
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts		- t			
This module provides students with deeper insights into topics in organic compounds and enzymes in catalytic processes. Organocatalysis: enantioselective implementation, principles, green chemistry, substance classes and application areas. Biocatalysis: effects of enzymes in view of different aspects, especially regarding organic synthesis.						
Intende	ed leari	ning outcomes				
scribe t	he stru	able to categorise organ acture and applications ne effects of enzymes.				
Course	S (type, n	umber of weekly contact hours	s, language — if other than Gei	man)		
S (3)						
		s essment (type, scope, lang le for bonus)	uage — if other than German,	examination offered — if no	t every semester, informati	on on whether
b) oral (c) oral (examin examin	mination (approx. 45 to action of one candidate ation in groups of up to ssessment: German an	each (20 to 30 minute 3 candidates (15 to 30		late)	
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
150 h						
Teachir	ıg cycl	e				
Referre	d to in	LPO I (examination regulation	ons for teaching-degree progra	mmes)		
Module	e appea	ars in				
Master's degree (1 major) Biochemistry (2015) Master's degree (1 major) Chemistry (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Master's degree (1 major) Biochemistry (2017) Master's degree (1 major) Chemistry (2018) Master's degree (1 major) Biochemistry (2019) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Chemistry (2024)						
Master's wi	th 1 major	r Biochemistry (2017)	-	• generated 19-Apr-2025 • e Master (120 ECTS) Biochemie	-	page 141 / 192



Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 142 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Module title					Abbreviation	
Human	geneti	cs			03-MS2HG-152-m01	
Module	e coord	inator		Module offered by		
holder	of the (Chair of of Human Geneti	cs	Faculty of Medicine		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
10	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
2 seme	ester	graduate				
Conten	Its					
This m	odule w	vill discuss current topics	in human genetics.			
Intend	ed lear	ning outcomes				
Studer detail.	nts have	e developed the ability to	understand relevant	questions in humar	n genetics and to discuss these in	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
V (2) + Module		t in: German or English				
		Sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether	
		mination (approx. 45 to 9	o minutes) or			
b) oral	examir	ation of one candidate e	ach (20 to 30 minute			
		ation in groups of up to g ssessment: German and,		o minutes per candic	late)	
Allocat						
Additic	nal inf	ormation				
			<u>.</u>			
Worklo	ad					
300 h						
Teachi	ng cvcl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master	Master's degree (1 major) Biochemistry (2015)					
	-	ee (1 major) Biochemistry				
Master	Master's degree (1 major) Biochemistry (2019)					

Module	Module title				Abbreviation	
Bioinfo	rmatic	S			07-MS2BI-152-m01	
Module	e coord	inator		Module offered by		
holder	ofthe	Chair of Bioinformatics		Faculty of Biology		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
10	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
and see	Advances and current results of bioinformatics are explained and discussed, this includes results from genome and sequence analysis, protein domains and protein families, large-scale data analysis (e.g. net generation sequences, proteomics data), analysis of different functional RNAs (e.g. miRNAs, lncRNAs).					
Intende	ed lear	ning outcomes				
		ecent results in bioinfor al technologies and res			advanced (Master)	level know-
Course	S (type, r	number of weekly contact hours	s, language — if other than Ge	rman)		
V (2) + Module		t in: German and/or En	glish			
		Sessment (type, scope, lang ole for bonus)	uage — if other than German,	examination offered — if no	t every semester, informati	on on whether
c) oral (d) oral	examin examir	mination (30 to 60 min ation of one candidate nation in groups of up to ssessment: German an	each (30 to 60 minute 3 candidates (30 to 6	s) or	or	
Allocat						
Additio	nal inf	ormation				
Worklo	ad					
	au					
300 h						
Teachi	ng cycl	e				
	<u> </u>					
Referre	d to in	LPO I (examination regulation	ons for teaching-degree progra	immes)		
Module						
	-	ee (1 major) Biochemis				
	-	ee (1 major) Biology (20	-			
	-	ee (1 major) Mathemati		()		
Master's degree (1 major) Computational Mathematics (2016)						
Master's degree (1 major) Biosciences (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)						
	Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)					
Master's degree (1 major) Biosciences (2017)						
Master's degree (1 major) Biochemistry (2017)						
	Master's degree (1 major) Biosciences (2018)					
Master	's degr	ee (1 major) Computatio	onal Mathematics (201	9)		
Master's wi	ith 1 majo	r Biochemistry (2017)		g • generated 19-Apr-2025 • e Master (120 ECTS) Biochemie	-	page 144 / 192

Master's degree (1 major) Mathematics (2019) Master's degree (1 major) Biochemistry (2019) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Biosciences (2021) Master's degree (1 major) Computational Mathematics (2022) Master's degree (1 major) Mathematics (2022) exchange program Biosciences (2022) Master's degree (1 major) Biosciences (2023) Master's degree (1 major) Computer Science (2023) Master's degree (1 major) Biosciences (2024) Master's degree (1 major) Computational Mathematics (2024) Master's degree (1 major) Mathematics (2024) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Master's degree (1 major) Computer Science (2025)

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Module	e title				Abbreviation	
System	Systems Biology 07-MS3S-152-m01					
Module	e coord	inator		Module offered by		
holder	ofthe	Chair of Bioinformatics		Faculty of Biology		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
10	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
Advances and current results of computational systems biology are explained and discussed, this includes re- sults from functional genomics, dynamics of the transcriptome, of metabolism and metabolic networks as well as regulatory networks.						
Intende	ed lear	ning outcomes				
		ecent results in systems al technologies and res			an advanced (Master) level know-
Course	S (type, r	number of weekly contact hours	, language — if other than Ge	rman)		
V (2) + Module		t in: German and/or Eng	glish			
		Sessment (type, scope, lang le for bonus)	uage — if other than German,	examination offered — if no	t every semester, informati	on on whether
c) oral d) oral	a) written examination (30 to 60 minutes, including multiple choice questions) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (30 to 60 minutes) Language of assessment: German and/or English					
Allocat	ion of _l	olaces				
Additio	onal inf	ormation				
Worklo	ad					
300 h						
Teachi	ng cycl	e				
Referre	ed to in	LPO I (examination regulation	ns for teaching-degree progra	mmes)		
Module	e appea	ars in				
Master	's degr	ee (1 major) Biochemist	ry (2015)			
Master	's degr	ee (1 major) Biology (20	15)			
Master	Master's degree (1 major) Mathematics (2016)					
Master's degree (1 major) Computational Mathematics (2016)						
Master's degree (1 major) Biosciences (2016)						
	Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)					
		-		Network Bavaria (EN	B) (2016)	
		ee (1 major) Bioscience ee (1 major) Biochemist				
	-	ee (1 major) Bioscience				
	-	ee (1 major) Dioscience ee (1 major) Computatio		9)		
Master's wi	ith 1 majo	r Biochemistry (2017)		s • generated 19-Apr-2025 • e Master (120 ECTS) Biochemie	-	page 146 / 192

Master's degree (1 major) Mathematics (2019)

Master's degree (1 major) Biochemistry (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Biosciences (2021)

Master's degree (1 major) Computational Mathematics (2022)

Master's degree (1 major) Mathematics (2022)

Master's degree (1 major) Biosciences (2023)

Master's degree (1 major) Biosciences (2024)

Master's degree (1 major) Computational Mathematics (2024)

Master's degree (1 major) Mathematics (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 147 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Module title Abbreviation						
Methoo	Methods in Life Sciences 07-MLS1-152-m01					
Module	e coord	inator		Module offered by		
degree	progra	mme coordinator Biolog	gie (Biology)	Faculty of Biology		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
10	numer	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	its					
Versioned molecular techniques, lipid research methods, microscopic methods, immunohistochemistry, mouse models and gene-knockout approaches, protein and molecular biology techniques, PCR, advanced protein bio- chemistry, methods in bioinformatics and computational biology.						
Intende	ed learr	ning outcomes				
		ble to review and expa d techniques to desigr			techniques and are a	able to choo-
Course	S (type, n	umber of weekly contact hours	, language — if other than Ge	rman)		
V (3) Module	e taught	t in: English				
		s essment (type, scope, lang le for bonus)	uage — if other than German,	examination offered — if no	t every semester, informati	on on whether
d) oral Studen	c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (30 to 60 minutes) Students will be informed about the method, length and scope of the assessment prior to the course. Language of assessment: English					
Allocal		naces				
 • • • • • • •		ormation				
Additio		ormation				
 Worklo						
	au					
300 h		-				
Teachi	ing cycli	e				
 Deferre						
Referre		LPO I (examination regulation	ins for teaching-degree progra	ammes)		
Module	e appea	irs in				
	-	ee (1 major) Biochemist	,			
Master's degree (1 major) Biology (2015)						
Master's degree (1 major) FOKUS Life Sciences (2015)						
Master's degree (1 major) Biosciences (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)						
		y course MINT Teacher				(010)
		ee (1 major) Bioscience			_) (_0_0)	
	-	ee (1 major) Biochemist				
		ee (1 major) Bioscience				
Master	's degre	ee (1 major) Biochemist	ry (2019)			
Master's wi	ith 1 major	Biochemistry (2017)		g • generated 19-Apr-2025 • e Master (120 ECTS) Biochemie	-	page 148 / 192

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Biosciences (2021)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 149 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Modul	e title				Abbreviation
Anima	lscienc	e and welfare			03-VTK-152-m01
Modul	Module coordinator			Module offered by	
Anima	Welfar	e Officer of the University	y of Würzburg	Faculty of Medicine	
ECTS	Methe	od of grading	Only after succ. con	npl. of module(s)	
3	(not)	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	undergraduate	Regular attendance the course).	of practical course (as specified at the beginning of
Conter	Its				
Theore mal sci		d practical basic knowle	dge of animal welfare	e legislation, animal	welfare ethics and laboratory ani-
Intend	ed lear	ning outcomes			
Studer SA (Ca		e the expertise to carry ou	ut or participate in an	imal experiments ac	cording to the guidelines of FELA-
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ge	rman)	
V (2) +	P (1)				
		Sessment (type, scope, langua Ile for bonus)	ge — if other than German,	examination offered — if no	t every semester, information on whether
		nation (approx. 90 minut ssessment: German and			
Allocat	ion of _l	olaces			
Additio	onal inf	ormation			
Worklo	ad				
90 h					
Teachi	ng cycl	e			
Referre	ed to in	LPOI (examination regulation	s for teaching-degree progra	immes)	
Modul	e appea	ars in			
	-	ee (1 major) Biochemistry	-		
	-	ee (1 major) Biochemistry			
Master	's degr	ee (1 major) Biochemistry	/ (2019)		

Module	e title				Abbreviation
Scienti	fic lect	uring M1			08-MBC-WR1-152-m01
Module	Module coordinator			Module offered by	
chairpe mistry)	erson o	f examination committee	Biochemie (Bioche-	Chair of Biochemis	try
ECTS	Meth	od of grading	Only after succ. con	nly after succ. compl. of module(s)	
5	(not)	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
		gives students the opport d Pharmacy and learn hov			lecture offered by the Faculty of priate manner.
Intende	ed lear	ning outcomes			
Studen needs.	ts are a	able to teach students in	earlier stages of thei	r degrees and tailor	their teaching to those students'
Course	S (type, 1	number of weekly contact hours, l	anguage — if other than Gei	rman)	
T (o)					
		s essment (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether
		l supervising study group issessment: German and,		prox. 2 pages)	
Allocat	ion of	places			
Additio	nal inf	ormation			
Worklo	ad				
150 h					
Teachi	ng cycl	e			
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	immes)	
Module	appea	ars in			
	-	ee (1 major) Biochemistry	-		
	-	ee (1 major) Biochemistry			
Master	's degr	ee (1 major) Biochemistry	(2019)		

Module	title			1	Abbreviation	
Assista	nce in	practical courses 1			08-MBC-AWA1-152-m01	
Module	e coord	inator		Module offered by	1	
chairpe mistry)	erson of	f examination committee	Biochemie (Bioche-	Chair of Biochemis	try	
ECTS	Metho	od of grading	Only after succ. con	nly after succ. compl. of module(s)		
5	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
tical ex	perime				of their degrees through a prac- e experiments in a responsible	
Intende	ed learı	ning outcomes				
		able to guide students in o instruct others in the la		r degrees through pi	ractical experiments and have	
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	rman)		
T (o)						
		essment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether	
		supervising student lab ssessment: German and		oort (approx. 1 page)		
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
150 h						
Teachi	ng cycl	e				
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)		
Module	e appea	irs in				
		ee (1 major) Biochemistry	r (2015)			
		ee (1 major) Biochemistry				
Master	's degr	ee (1 major) Biochemistry	(2019)			

Master's with 1 major Biochemistry (2017) JMU Würzburg • generated 19-Apr-2025 • exam. reg.	
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data record Master (120 ECTS) Biochemie - 2017	

Module	title				Abbreviation		
Literatu	ure sen	ninar 3			08-MBC-LIT3-152-m01		
Module	e coord	inator		Module offered by			
chairperson of examination committee Bio mistry)			Biochemie (Bioche-	Chair of Biochemist	try		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)			
5	nume	rical grade					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	graduate					
Conten	ts						
present sions o	tations f the re	on those publications to	their classmates. Th tact the module coor	ose presentations w	in the life sciences and deliver ill be followed by critical discus- o find out if you can use this mo-		
Intende	ed learı	ning outcomes					
	d of the				biochemistry-related literature in and discussion of scientific in-		
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)			
S (2) Module	e taugh	t in: German or English					
		essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether		
		20 to 40 minutes) ssessment: German and,	or English				
Allocation of places							
Additio	nal inf	ormation					
Worklo	ad						
150 h							
Teachir	ıg cycl	е					
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)			
Module	e appea	ins in					
	-	ee (1 major) Biochemistry					
	•	ee (1 major) Biochemistry					
master	Master's degree (1 major) Biochemistry (2019)						



Module	title			Abbreviation	
Tumor G	enetics	03-MBC-TG-161-m01			
Module	coordinator		Module offered by		
holder of Human G	f the Professorship Human Ger Genetics	netics at Institute for	Institute of Human	Genetics	
ECTS I	Method of grading	Only after succ. com	pl. of module(s)		
5 r	numerical grade				
Duration	Module level	Other prerequisites			
1 semest	ter graduate				
Contents	5				
cer, HNP				ry cancer (breast & ovarian can- cancer genetics, genetic techni-	
Intended	l learning outcomes				
ry cance of tumor	r. Name and illustrate genetic	methods. Apply the a ation and presentatic	cquired knowledge t	y pathomechanisms in heredita- to scientific questions in the field es. Acquire the ability to critically	
Courses	(type, number of weekly contact hours, l	anguage — if other than Ger	man)		
.,	V (1) + S (1) Module taught in: English				
	of assessment (type, scope, langua reditable for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
b) log (20 c) oral ex d) oral ex e) preser	a) written examination (approx. 45 to 90 minutes) or b) log (20 to 30 pages) or c) oral examination of one candidate each (20 to 30 minutes) or d) oral examination in groups of up to 3 candidates (15 to 30 minutes per candidate) or e) presentation (20 to 40 minutes) Language of assessment: German and/or English				
Allocatio	on of places				
Addition	al information				
 Workloa	d				
150 h	u				
Teaching	g cvcle				
Referred	to in LPO I (examination regulations	for teaching-degree progra	mmes)		
Module	appears in				
	degree (1 major) Biochemistry	-			
	s degree (1 major) Biomedicine 5 degree (1 major) Biochemistry	-			
	s degree (1 major) Biomedicine				
	degree (1 major) Biochemistry				

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 154 / 192
	data record Master (120 ECTS) Biochemie - 2017	



Focus - Expert Key Qualifications (project oriented)

(40 ECTS credits)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 155 / 192
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Subfield Project attendant Modules

(30 ECTS credits)

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	data record Master (120 ECTS) Biochemie - 2017	



Module title					Abbreviation
Special lectures 1					08-MBC-FTSV1-152-m01
Module	e coord	inator		Module offered by	
chairpe mistry)	erson o	f examination committee	Biochemie (Bioche-	Chair of Biochemis	try
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
5	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	graduate	Please consult with	degree programme o	coordinator in advance.
Conten	ts				
have se is relate	elected ed to th	as their focus. The modu	le equips students w be offered by the Ur	vith advanced knowl niversity of Würzburg	ic that is relevant to the field they edge in the natural sciences that g or by external institutions. Deci-
Intende	ed lear	ning outcomes			
Studen	ts have				anced their specific qualificati- neir field.
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)	
V (2)					
		t in: German or English			
		sessment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether
b) log (c) oral d) oral e) pres	20 to 3 examin examir entatio	mination (approx. 45 to 9 o pages) or ation of one candidate e nation in groups of up to 3 n (20 to 40 minutes) ssessment: German and	ach (20 to 30 minute 3 candidates (15 to 30		date) or
Allocat	ion of _l	olaces			
Additio	nal inf	ormation			
Worklo	ad				
150 h					
Teachi	ng cycl	e			
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)	
Module	annes	ars in			
		ee (1 major) Biochemistry	(2015)		
	Master's degree (1 major) Biochemistry (2015) Master's degree (1 major) Biochemistry (2017)				
Master's degree (1 major) Biochemistry (2019)					

Module title Abbreviation					Abbreviation	
Specia	l lectur	es 2			08-MBC-FTSV2-152-m01	
Modul	e coord	inator		Module offered by	l	
chairpo mistry)		f examination committee	Biochemie (Bioche-	Chair of Biochemis	try	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	(not) s	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ester	graduate	Please consult with	degree programme o	coordinator in advance.	
Conter	nts					
have s is relat	elected ed to th	as their focus. The modu	ule equips students w y be offered by the Ur	vith advanced knowl niversity of Würzburg	ic that is relevant to the field they edge in the natural sciences that g or by external institutions. Deci-	
Intend	ed lear	ning outcomes				
		e developed an improved e acquired additional exp			anced their specific qualificati- neir field.	
Course	S (type, r	number of weekly contact hours, I	language — if other than Gei	rman)		
V (2) Module	e taugh	t in: German or English				
		sessment (type, scope, langua le for bonus)	age — if other than German,	examination offered — if no	ot every semester, information on whether	
b) log (c) orald) orale) pres	(20 to 3 examin examir entatio	mination (approx. 45 to 9 o pages) or ation of one candidate e nation in groups of up to n (20 to 40 minutes) ssessment: German and	ach (20 to 30 minute 3 candidates (15 to 30		date) or	
-	tion of J					
Additio	onal inf	ormation				
Worklo	ad					
150 h						
Teachi	ng cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Modul	e appea	ars in				
		ee (1 major) Biochemistry	y (2015)			
Master	Master's degree (1 major) Biochemistry (2017)					
Master	's degr	ee (1 major) Biochemistry	y (2019)			

Module title					Abbreviation	
Conference participation with poster presentation 1			resentation 1		08-MBC-FTKP1-152-m01	
Module	e coord	inator		Module offered by	1	
chairpe mistry)	erson o	f examination committee	Biochemie (Bioche-	Chair of Biochemis	try	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate	Please consult with	degree programme	coordinator in advance.	
Conten	ts					
is relev	ant to t		ed as their focus and	to present their ow	l conference covering a topic that n findings in poster format. Deci-	
Intende	ed lear	ning outcomes				
cus. Th	ey have heir ab	e the opportunity to meet vility to reflect critically or	other researchers w	orking in the field. T	d they have selected as their fo- hey have the opportunity to en- fic community and defend it	
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	rman)		
R (o) Module	e taugh	t in: German or English				
		sessment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if n	ot every semester, information on whether	
Poster Langua) ssessment: German and,	/or English			
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
150 h						
Teachi	ıg cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	e appea	urs in				
Master	's degr	ee (1 major) Biochemistry	r (2015)			
	Master's degree (1 major) Biochemistry (2017)					
Master	's degr	ee (1 major) Biochemistry	r (2019)			

Module title					Abbreviation	
Conference participation with poster presentation 2			resentation 2		08-MBC-FTKP2-152-m01	
Module	coord	inator		Module offered by		
chairpe mistry)	erson o	f examination committee	Biochemie (Bioche-	Chair of Biochemis	try	
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)		
5	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate	Please consult with	degree programme	coordinator in advance.	
Conten	ts		·			
is relev	ant to t		ed as their focus and	to present their ow	l conference covering a topic that n findings in poster format. Deci-	
Intende	ed learı	ning outcomes				
cus. Th	ey have heir ab	e the opportunity to meet vility to reflect critically or	t other researchers we	orking in the field. T	d they have selected as their fo- hey have the opportunity to en- fic community and defend it	
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)		
R (o) Module	taugh	t in: German or English				
		essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if n	ot every semester, information on whether	
Poster Langua) ssessment: German and,	/or English			
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad		·			
150 h						
Teachi	ng cycl	e				
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)		
		-	• •			
Module	appea	irs in				
		ee (1 major) Biochemistry	/ (2015)			
	Master's degree (1 major) Biochemistry (2017)					
Master	s degr	ee (1 major) Biochemistry	(2019)			

Module title					Abbreviation
Confer	ence pa	articipation with lecture 1	L		08-MBC-FTKV1-152-m01
Module	e coord	inator		Module offered by	J
chairpe mistry)	erson o	f examination committee	Biochemie (Bioche-	Chair of Biochemis	try
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
10	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	graduate	Please consult with	degree programme	coordinator in advance.
Conten	ts				
is relev	ant to		ed as their focus and	to deliver a present	l conference covering a topic that tation on their own findings. Deci-
Intende	ed lear	ning outcomes			
cus. Th hance t against	ey have their at t criticis	e the opportunity to meet oility to reflect critically or sm.	other researchers we their own work, pre	orking in the field. T sent it to the scienti	I they have selected as their fo- hey have the opportunity to en- fic community and defend it
	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
R (o) Module	e taugh	t in: German or English			
		sessment (type, scope, langua Ile for bonus)	ge — if other than German, o	examination offered — if n	ot every semester, information on whether
		(20 to 40 minutes) ssessment: German and,	/or English		
Allocat	ion of _l	olaces			
Additio	onal inf	ormation			
Worklo	ad				
300 h					
Teachi	ng cycl	e			
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	e appea	ars in			
	-	ee (1 major) Biochemistry	-		
	0	ee (1 major) Biochemistry	· //		
master	s aegr	ee (1 major) Biochemistry	(2019)		

Module title					Abbreviation	
Confer	ence pa	articipation with lecture a	2		08-MBC-FTKV2-152-m01	
Module	e coord	inator		Module offered by		
chairpe mistry)	erson o	f examination committee	Biochemie (Bioche-	Chair of Biochemis	try	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
10	(not) s	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate	Please consult with	degree programme	coordinator in advance.	
Conten	ts					
is relev	ant to		ed as their focus and	to deliver a present	l conference covering a topic that tation on their own findings. Deci-	
Intende	ed lear	ning outcomes				
cus. Th hance t against	ey have their at t criticis	e the opportunity to meet oility to reflect critically or sm.	other researchers we their own work, pres	orking in the field. T sent it to the scienti	d they have selected as their fo- hey have the opportunity to en- fic community and defend it	
	S (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)		
R (o) Module	e taugh	t in: German or English				
		sessment (type, scope, langua Ile for bonus)	ge — if other than German, e	examination offered — if n	ot every semester, information on whether	
		(20 to 40 minutes) ssessment: German and,	/or English			
Allocat	ion of _l	olaces				
Additio	onal inf	ormation				
Worklo	ad					
300 h						
Teachi	ng cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	e appea	ars in				
	-	ee (1 major) Biochemistry				
	Aaster's degree (1 major) Biochemistry (2017)					
waster	s aegr	ee (1 major) Biochemistry	(2019)			

Module title				Abbreviation		
Excursion 1					08-MBC-FTEX1-152-m01	
Module	e coord	inator		Module offered by		
chairpe mistry)	erson o	f examination committee	Biochemie (Bioche-	Chair of Biochemist	ry	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	(not) s	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate	Please consult with	degree programme o	coordinator in advance.	
Conten	ts					
the fiel science stitutio Intende Studen	d they l es that ns. Dec ed learn its have	have selected as their foo is related to their field. Th ision on credit transfer to ning outcomes e developed an improved	cus. The module equine module may be off to be made by examin scientific knowledge	ps students with adv ered by the Universi ation committee.	lated to a topic that is relevant to vanced knowledge in the natural ty of Würzburg or by external in-	
		e acquired additional exp	· · ·	•	eir field.	
	S (type, n	umber of weekly contact hours, la	anguage — if other than Ger	man)		
E (1) Module	e taugh	t in: German or English				
		s essment (type, scope, langua) le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
b) log (c) oral d) oral e) pres	20 to 3 examin examin entatio	nination (approx. 45 to 9 o pages) or ation of one candidate ea ation in groups of up to <u>3</u> n (20 to 40 minutes) ssessment: German and/	ach (20 to 30 minute: 3 candidates (15 to 30		late) or	
Allocat	ion of p	olaces				
Additio	onal info	ormation				
Worklo	ad					
150 h						
Teachi	ng cycl	e				
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	e appea	in and the second se				
Master	Master's degree (1 major) Biochemistry (2015) Master's degree (1 major) Biochemistry (2017) Master's degree (1 major) Biochemistry (2019)					

Module	title				Abbreviation
Excursion 2					08-MBC-FTEX2-152-m01
Module	coord	inator		Module offered by	l
chairpe mistry)	rson o	f examination committee	Biochemie (Bioche-	Chair of Biochemis	try
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 semes	ster	graduate	Please consult with	degree programme o	coordinator in advance.
Conten	ts				
the field science	d they s that	have selected as their for	cus. The module equi he module may be of	ps students with ad fered by the Univers	elated to a topic that is relevant to vanced knowledge in the natural ity of Würzburg or by external in-
Intende	ed lear	ning outcomes			
Studen	ts have				anced their specific qualificati- neir field.
Courses	5 (type, r	number of weekly contact hours, l	anguage — if other than Ger	man)	
E (1)					
Module	taugh	t in: German or English			
		sessment (type, scope, langua ole for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether
b) log (2 c) oral e d) oral e e) prese	20 to 3 examin examir entatio	mination (approx. 45 to 9 to pages) or nation of one candidate e nation in groups of up to g on (20 to 40 minutes) ussessment: German and	ach (20 to 30 minute 3 candidates (15 to 30		date) or
Allocati	ion of _l	places			
Additio	nal inf	ormation			
Worklo	ad				
150 h					
Teachir	ng cycl	e			
Referred to in LPO I (examination regulations for teaching-degree programmes)					
			· · · · ·		
Module appears in					
		ee (1 major) Biochemistry	/ (2015)		
	Master's degree (1 major) Biochemistry (2017)				
Master's degree (1 major) Biochemistry (2019)					

Module title				Abbreviation		
Seminar 1					08-MBC-FTSE1-152-m01	
Module	e coord	inator		Module offered by		
chairpe mistry)		f examination committee	Biochemie (Bioche-	Chair of Biochemist	ry	
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)		
5	(not) s	successfully completed				
Duratio	on	Module level	Other prerequisites			
1 seme	ster	graduate	Please consult with	degree programme o	coordinator in advance.	
Conten	ts					
have so topic c credit t Intendo	elected overed. transfer ed lear	as their focus. The modu The seminar may be offe to be made by examinat ning outcomes	le enhances and con red by the University ion committee.	solidates the studer of Würzburg or by e	c that is relevant to the field they nts' knowledge of the field and xternal institutions. Decision on	
		a wider overview of receives a cquired additional exp			they have selected as their fo- eir field.	
		umber of weekly contact hours, l	· · · · ·	· ·		
S (2)	- (7)					
	e taugh	t in: German or English				
		s essment (type, scope, langua; le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether	
b) log (c) oral d) oral e) pres	20 to 3 examin examir entatio	nination (approx. 45 to 9 o pages) or ation of one candidate ea ation in groups of up to <u>3</u> n (20 to 40 minutes) ssessment: German and/	ach (20 to 30 minutes 3 candidates (15 to 30		late) or	
Allocat	ion of p	olaces				
Additio	onal inf	ormation				
Worklo	ad					
150 h						
Teachi	ng cycl	e				
Referred to in LPO I (examination regulations for teaching-degree programmes)						
	e appea					
	-	ee (1 major) Biochemistry	-			
	-	ee (1 major) Biochemistry				
master	Master's degree (1 major) Biochemistry (2019)					

Module title					Abbreviation
Seminar 2					08-MBC-FTSE2-152-m01
Module	e coord	inator		Module offered by	
chairpe mistry)		f examination committee	Biochemie (Bioche-	Chair of Biochemist	ry
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
5	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	graduate	Please consult with	degree programme o	coordinator in advance.
Conten	ts				
have se topic co credit t	elected overed. ransfer	as their focus. The modu The seminar may be offe to be made by examinat	le enhances and con ered by the University	solidates the studer	c that is relevant to the field they hts' knowledge of the field and xternal institutions. Decision on
		ning outcomes			
		a wider overview of recer e acquired additional exp			they have selected as their fo- eir field.
Course	S (type, n	number of weekly contact hours, l	anguage — if other than Ger	man)	
S (2) Module	e taugh	t in: German or English			
Metho	d of ass	sessment (type, scope, langua	ge — if other than German, e	examination offered — if no	t every semester, information on whether
module is	s creditab	le for bonus)			
b) log (c) oral d) oral e) pres	20 to 3 examin examin entatio	mination (approx. 45 to 9 o pages) or ation of one candidate ea nation in groups of up to <u>3</u> n (20 to 40 minutes) ssessment: German and/	ach (20 to 30 minutes 3 candidates (15 to 30		late) or
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
150 h					
Teachi	ng cycl	е			
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module	e appea	ins in			
Master	Master's degree (1 major) Biochemistry (2015) Master's degree (1 major) Biochemistry (2017) Master's degree (1 major) Biochemistry (2019)				

Module title				Abbreviation			
Seminar 3					08-MBC-FTSE3-152-m01		
Module	e coord	inator		Module offered by			
chairpe mistry)	erson o	f examination committee	Biochemie (Bioche-	Chair of Biochemist	ry		
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)			
5	(not) s	successfully completed					
Duratio	on	Module level	Other prerequisites				
1 seme	ster	graduate	Please consult with	degree programme o	coordinator in advance.		
Conten	ts						
have se topic co credit t Intende	elected overed. ransfer ed lear i	as their focus. The modu The seminar may be offe to be made by examinat hing outcomes	le enhances and con red by the University ion committee.	solidates the studer of Würzburg or by e	c that is relevant to the field they hts' knowledge of the field and xternal institutions. Decision on they have selected as their fo-		
		e acquired additional exp					
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)			
S (2) Module	e taugh	t in: German or English					
		e ssment (type, scope, langua) le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether		
b) log (c) oral d) oral e) pres	20 to 3 examin examin entatio	nination (approx. 45 to 9 o pages) or ation of one candidate ea ation in groups of up to 3 n (20 to 40 minutes) ssessment: German and/	ach (20 to 30 minute: 3 candidates (15 to 30		late) or		
Allocat	ion of p	olaces					
Additio	onal inf	ormation					
Worklo	ad						
150 h							
Teachi	ng cycl	9					
Referre	Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module							
Master	Master's degree (1 major) Biochemistry (2015) Master's degree (1 major) Biochemistry (2017) Master's degree (1 major) Biochemistry (2019)						

Module	e title				Abbreviation		
Workshop 1 08-MBC-FTWS1-15			08-MBC-FTWS1-152-m01				
Module	e coord	inator		Module offered by			
chairpe mistry)	erson o	f examination committee	Biochemie (Bioche-	Chair of Biochemist	ry		
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)			
5	(not) s	successfully completed					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	graduate	Please consult with	degree programme o	coordinator in advance.		
Conten	ts						
they ha	ive sele owledg	ected as their focus. The r e in the natural sciences	nodule equips stude that is related to thei	nts with advanced m r field. The workshop	ic that is relevant to the field nethodological skills and advan- p may be offered by the Universi- by examination committee.		
Intende	ed learı	ning outcomes					
	hance				d methodological skills and have lls that will help them specialise		
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)			
R (o) Module	e taugh	t in: German or English					
		essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether		
		rt (approx. 2 pages) ssessment: German and,	/or English				
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
150 h							
Teachi	ng cycl	e					
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)			
Module	e appea	in in					
	-	ee (1 major) Biochemistry					
	0	ee (1 major) Biochemistry	. ,,				
master	s aegr	ee (1 major) Biochemistry	(2019)				

Module	e title				Abbreviation		
Workshop 2				o8-MBC-FTWS2-152-mo1			
Module	e coord	inator		Module offered by			
chairpe mistry)	erson of	f examination committee	Biochemie (Bioche-	Chair of Biochemist	ry		
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)			
5	(not) s	successfully completed					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	graduate	Please consult with	degree programme o	coordinator in advance.		
Conten	ts						
they ha ced kno	ive sele owledg	ected as their focus. The r e in the natural sciences	nodule equips stude that is related to thei	nts with advanced m r field. The worksho	ic that is relevant to the field nethodological skills and advan- p may be offered by the Universi- by examination committee.		
Intende	ed learı	ning outcomes					
	hance				d methodological skills and have lls that will help them specialise		
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)			
R (o) Module	e taugh	t in: German or English					
		s essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether		
		rt (approx. 2 pages) ssessment: German and,	or English				
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
150 h							
Teachir	ng cycl	e					
Referre	d to in	LPO I (examination regulations	s for teaching-degree progra	mmes)			
Module	e appea	irs in					
	-	ee (1 major) Biochemistry	-				
	-	ee (1 major) Biochemistry					
master	s aegr	ee (1 major) Biochemistry	(2019)				

Module	e title				Abbreviation		
Worksł	10p 3				08-MBC-FTWS3-152-m01		
Module	e coord	inator		Module offered by			
chairpe mistry)	erson of	f examination committee	Biochemie (Bioche-	Chair of Biochemist	ry		
ECTS	Metho	od of grading	Only after succ. com	npl. of module(s)			
5	(not) s	successfully completed					
Duratio	n	Module level	Other prerequisites				
1 seme	ster	graduate	Please consult with	degree programme o	coordinator in advance.		
Conten	ts						
they ha	ive sele owledg	ected as their focus. The r e in the natural sciences	nodule equips stude that is related to thei	nts with advanced m r field. The workshop	ic that is relevant to the field nethodological skills and advan- p may be offered by the Universi- by examination committee.		
Intende	ed leari	ning outcomes					
	hance				d methodological skills and have lls that will help them specialise		
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)			
R (o) Module	e taugh	t in: German or English					
		s essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	t every semester, information on whether		
		rt (approx. 2 pages) ssessment: German and,	/or English				
Allocat	ion of p	olaces					
Additio	nal inf	ormation					
Worklo	ad						
150 h							
Teachi	ng cycl	e					
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)			
Module	e appea	irs in					
	-	ee (1 major) Biochemistry					
	-	ee (1 major) Biochemistry					
master	s uegr	ee (1 major) Biochemistry	(2019)				

Module	e title			,	Abbreviation
Assistance in practical courses 1					08-MBC-FTPB1-152-m01
Module coordinator				Module offered by	
chairpe mistry)	erson o	f examination committee	Biochemie (Bioche-	Chair of Biochemis	try
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	(not) s	successfully completed			
Duratio	on	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts		·		
tical ex manne	perime r and in				of their degrees through a prac- se experiments in a responsible
Studen	ts are a			r degrees through p	ractical experiments and have
Course	S (type, r	number of weekly contact hours, I	anguage — if other than Gei	rman)	
T (o) Module	e taugh	t in: German or English			
		sessment (type, scope, langua le for bonus)	ge — if other than German,	examination offered — if n	ot every semester, information on whether
		supervising student lab ssessment: German and		oort (approx. 1 page)	
Allocat	ion of _l	olaces			
Additio	nal inf	ormation			
Worklo	ad				
150 h					
Teachi	ng cycl	e			
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	immes)	
Module	e appea	ars in			
		ee (1 major) Biochemistry	/ (2015)		
	-	ee (1 major) Biochemistry			
Master	's degr	ee (1 major) Biochemistry	/ (2019)		

Module	e title				Abbreviation
Assistance in practical courses 2					08-MBC-FTPB2-152-m01
Module coordinator				Module offered by	<u></u>
chairpe mistry)	erson o	f examination committee	Biochemie (Bioche-	Chair of Biochemis	stry
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	(not) s	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
tical ex	perime				of their degrees through a prac- se experiments in a responsible
Intende	ed lear	ning outcomes			
		able to guide students in o instruct others in the la		r degrees through p	ractical experiments and have
Course	S (type, r	number of weekly contact hours, l	anguage — if other than Gei	rman)	
T (o) Module	taugh	t in: German or English			
		sessment (type, scope, langua le for bonus)	ge — if other than German,	examination offered — if n	ot every semester, information on whether
		supervising student lab ssessment: German and		oort (approx. 1 page))
Allocat	ion of ا	olaces			
Additio	nal inf	ormation			
Worklo	ad				
150 h					
Teachi	ng cycl	e			
Referre	d to in	LPOI (examination regulation	s for teaching-degree progra	immes)	
Module	e appea	ars in			
	-	ee (1 major) Biochemistry			
	-	ee (1 major) Biochemistry			
Master	s degr	ee (1 major) Biochemistry	(2019)		



Biochemistry

Subfield Completive Qualifications

(10 ECTS credits)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 173 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Module title				Abbreviation		
Bioorganic Chemistry 08-SCM3-152-m01						
Module				Module offered by		
lecturer Chemis		ure "Bioorganische Chei	nie" (Bioorganic	Institute of Organic	Chemistry	
ECTS	Metho	od of grading	Only after succ. con	pl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 semes	ster	graduate				
Conten	ts					
spectro manipu the fran to enab Key con thogona ceptor i Intende The stu obtain l	Bioorganic chemistry unites the central questions of organic chemistry, biochemistry, medicinal chemistry and spectroscopy with a focus on biomolecules. At the core of bioorganic chemistry is the synthesis and purposeful manipulation of biomolecules, such as nucleic acids, peptides, proteins, carbohydrates and lipids. This includes the framework of structure-function relationships and the fundamental understanding of biological mechanisms, to enable applications towards biomaterials, biosensing, bioimaging, clinical diagnostics and therapeutics. Key concepts covered in the course are nucleic acid chemistry, peptide chemistry, carbohydrate chemistry, bioor-thogonal reactions, molecular diversity, solid-phase synthesis, molecular recognition and interactions (ligand-receptor interactions, signal transduction) Intended learning outcomes The students will have a molecular understanding of the structure and reactivity of biomolecules. The students obtain knowledge of modern synthetic methods in bioorganic chemistry and can explain principles of molecular interactions, carbohy-					purposeful This includes mechanisms, peutics. mistry, bioor- ns (ligand-re- e students of molecular
		uns. umber of weekly contact hours,	language — if other than Ger	man)		
S (3)						
		essment (type, scope, langua le for bonus)	age — if other than German, o	examination offered — if no	t every semester, informati	on on whether
b) oral e c) oral e	examin examin	nination (approx. 45 to g ation of one candidate e ation in groups of up to g ssessment: German and	each (20 to 30 minute 3 candidates (15 to 30		ate)	
Allocati	ion of p	olaces				
Additio	nal info	ormation				
Worklo	ad					
150 h						
Teachir	ng cyclo	e				
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	mmes)		
Module						
Master' Master'	s degre s degre	ee (1 major) Biochemistry ee (1 major) Chemistry (2 ee (1 major) Functional N ning degree Gymnasium	016) laterials (2016)	on PLUS, Elite Netwo	ork Bavaria (ENB) (20	D16)
Master's wi	th 1 major	Biochemistry (2017)	-	• generated 19-Apr-2025 • e Master (120 ECTS) Biochemie	_	page 174 / 192

Julius-Maximilians-UNIVERSITÄT WÜRZBURG

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)

Master's degree (1 major) Biochemistry (2017)

Master's degree (1 major) Chemistry (2018) Master's degree (1 major) Biochemistry (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Functional Materials (2022)

Master's degree (1 major) Chemistry (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Master's degree (1 major) Functional Materials (2025)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 175 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Modul	e title				Abbreviation
Bioano	organic	Chemistry			08-ACM2-152-m01
Module coordinator				Module offered by	
and Me	edizinis	ninar "Anorganische Asp schen Chemie" (Inorganic edicinal Chemistry)		Institute of Inorgan	ic Chemistry
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duratio	on	Module level	Other prerequisites	i	
1 seme	ester	graduate			
Conter	nts				
	ds of B				chemistry (BIC). It discusses the ns of BIC in the fields of diagnosis
Intend	ed lear	ning outcomes			
Studer	nts are a		•		explain the structure and effects medicine.
Course	S (type, 1	number of weekly contact hours, I	anguage — if other than Ge	rman)	
S (3)			-		
		s essment (type, scope, langua ble for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether
b) oral c) oral	examir examir	mination (approx. 45 to 9 nation of one candidate e nation in groups of up to assessment: German and	ach (20 to 30 minute 3 candidates (15 to 30		date)
Allocat	tion of	places			
Additio	onal inf	ormation			
Worklo	ad				
150 h					
Teachi	ng cycl	e			
Referre	ed to in	LPO I (examination regulation	s for teaching-degree progra	ammes)	
Modul	e appea	ars in			
Master	's degr	ee (1 major) Biochemistry	/ (2015)		
Master	's degr	ee (1 major) Biochemistry	/ (2017)		

Modul	e title				Abbreviation
Moder	n aspec	ts of natural product Ch	emistry and Biologica	al Chemistry	08-0CM-NAT-152-m01
Modul	e coord	inator		Module offered	by
lecture	r of the	seminar		Institute of Orga	anic Chemistry
ECTS	Metho	od of grading	Only after succ. con	1pl. of module(s))
5	nume	rical grade			
Duratio	on	Module level	Other prerequisites		
1 seme	ester	graduate			
Conter	nts				
This m	odule d	liscusses advanced topic	s in natural product o	chemistry and bi	ological chemistry.
Intend	ed lear	ning outcomes			
Studer	nts are a	able to discuss advanced	topics in natural pro	duct chemistry a	and biological chemistry.
Course	S (type, r	number of weekly contact hours,	language — if other than Ger	rman)	
S (3)					
		Sessment (type, scope, langua Ile for bonus)	ge — if other than German,	examination offered –	- if not every semester, information on whether
b) oral c) oral	examir examin	mination (approx. 45 to 9 nation of one candidate e ation in groups of up to 3 ssessment: German and	ach (20 to 30 minute 3 candidates (15 to 30		ndidate)
	tion of p				
mester	rs. Amo		me number of subject	ct semesters, pla	ording to the number of subject se- aces will be allocated by lot. A waiting ble.
Additio	onal inf	ormation			
Worklo	bad				
150 h					
Teachi	ng cycl	e			
Referre	ed to in	LPOI (examination regulation	s for teaching-degree progra	immes)	
Modul	e appea	ars in			
	-	ee (1 major) Biochemistr			
Master	's degr	ee (1 major) Biochemistr	y (2017)		

Module title				Abbreviation		
Organo- and Biocatalysis 08-HKM1-152-m01						
Module coordinator Module offered by						
lecture	r of the	seminar "Organo- and	Biokatalyse"	Faculty of Chemistry	y and Pharmacy	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	nume	rical grade				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
process	ses. Or plicatio	rovides students with o ganocatalysis: enantios on areas. Biocatalysis: o	selective implementati	on, principles, green	chemistry, substand	ce classes
Intende	ed leari	ning outcomes				
scribe t	he stru	able to categorise organ Icture and applications ne effects of enzymes.				
Course	S (type, n	umber of weekly contact hour	s, language — if other than Gei	rman)		
S (3)						
		s essment (type, scope, lang le for bonus)	uage — if other than German,	examination offered — if no	t every semester, informati	on on whether
b) oral c) oral (Langua	examin examin ge of a	mination (approx. 45 to ation of one candidate ation in groups of up to ssessment: German an	each (20 to 30 minute 3 candidates (15 to 30		late)	
Allocat		Jaces				
 • • • • • • •		ormation				
Additio			-			
Worklo	au					
150 h		•				
Teachi	ig cyci	e				
 D - f	J 4 . !					
Kererre		LPO I (examination regulation	ons for teaching-degree progra	immes)		
 M - dula						
Module						
Master's degree (1 major) Biochemistry (2015) Master's degree (1 major) Chemistry (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Master's degree (1 major) Biochemistry (2017) Master's degree (1 major) Chemistry (2018)						
Master Supple	's teach mentar	ee (1 major) Biochemis ning degree Gymnasiun y course MINT Teacher ee (1 major) Chemistry	MINT Teacher Educat Education PLUS, Elite			020)
Master's wi	ith 1 majoi	r Biochemistry (2017)	-	g • generated 19-Apr-2025 • e Master (120 ECTS) Biochemie	-	page 178 / 192



Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Master's with 1 major Biochemistry (2017)	ster's with 1 major Biochemistry (2017) JMU Würzburg • generated 19-Apr-2025 • exam. reg.	
	data record Master (120 ECTS) Biochemie - 2017	1

Module title					Abbreviation	
Bioinformatics					07-MS2BI-152-m01	
Module coordinator				Module offered by		
holder of the Chair of Bioinformatics				Faculty of Biology		
ECTS Method of grading		Only after succ. compl. of module(s)				
10 numerical grade						
Duration Module level Other prerequisites						
1 semester graduate						
Contents						
Advances and current results of bioinformatics are explained and discussed, this includes results from genome and sequence analysis, protein domains and protein families, large-scale data analysis (e.g. net generation se- quences, proteomics data), analysis of different functional RNAs (e.g. miRNAs, lncRNAs).						
Intended learning outcomes						
Understand recent results in bioinformatics. Discuss their implications. Have an advanced (Master) level know- ledge of typical technologies and research questions in bioinformatics.						
Courses (type, number of weekly contact hours, language — if other than German)						
V (2) + S (1) Module taught in: German and/or English						
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)						
a) written examination (30 to 60 minutes, including multiple choice questions) or c) oral examination of one candidate each (30 to 60 minutes) or d) oral examination in groups of up to 3 candidates (30 to 60 minutes) Language of assessment: German and/or English						
Allocation of places						
Additional information						
Workload						
300 h						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module appears in						
Master's degree (1 major) Biochemistry (2015)						
Master's degree (1 major) Biology (2015)						
Master's degree (1 major) Mathematics (2016)						
Master's degree (1 major) Computational Mathematics (2016)						
Master's degree (1 major) Biosciences (2016)						
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)						
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)						
Master's degree (1 major) Biosciences (2017) Masteria degree (1 major) Biosciences (2017)						
Master's degree (1 major) Biochemistry (2017)						
Master's degree (1 major) Biosciences (2018) Master's degree (1 major) Computational Mathematics (2010)						
Master's degree (1 major) Computational Mathematics (2019)						
Master's wi	ith 1 majo	r Biochemistry (2017)	-	s • generated 19-Apr-2025 • e Master (120 ECTS) Biochemie	-	page 180 / 192

Master's degree (1 major) Mathematics (2019) Master's degree (1 major) Biochemistry (2019) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Biosciences (2021) Master's degree (1 major) Computational Mathematics (2022) Master's degree (1 major) Mathematics (2022) exchange program Biosciences (2022) Master's degree (1 major) Biosciences (2023) Master's degree (1 major) Computer Science (2023) Master's degree (1 major) Biosciences (2024) Master's degree (1 major) Computational Mathematics (2024) Master's degree (1 major) Mathematics (2024) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Master's degree (1 major) Computer Science (2025)

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Module title				Abbreviation		
System	ns Biolo	ogy			07-MS3S-152-m01	
Module	e coord	inator		Module offered by		
holder	of the (Chair of Bioinformatics		Faculty of Biology		
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)		
10	nume	rical grade				
Duratio	on	Module level	Other prerequisites			
1 seme	1 semester graduate					
Conten	ts	·				
sults fr	om fun	l current results of comp ctional genomics, dyna networks.				
Intende	ed lear	ning outcomes				
		ecent results in systems al technologies and res			an advanced (Master) level know-
Course	S (type, r	number of weekly contact hours	, language — if other than Ge	rman)		
V (2) + Module		t in: German and/or Eng	glish			
		Sessment (type, scope, lang ole for bonus)	uage — if other than German,	examination offered — if no	t every semester, informati	on on whether
c) oral d) oral	examin examir	mination (30 to 60 minu ation of one candidate nation in groups of up to ssessment: German an	each (30 to 60 minute 3 candidates (30 to 6	s) or	Dr	
Allocat	ion of _l	places				
Additio	onal inf	ormation				
Worklo	ad					
300 h						
Teachi	ng cvcl	e				
	0.7					
Referre	ed to in	LPO I (examination regulation	ns for teaching-degree progra	immes)		
Module	e appea	ars in				
Master	's degr	ee (1 major) Biochemist	ry (2015)			
Master's degree (1 major) Biology (2015)						
Master's degree (1 major) Mathematics (2016)						
Master's degree (1 major) Computational Mathematics (2016)						
Master's degree (1 major) Biosciences (2016)						
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)						
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)						
Master's degree (1 major) Biosciences (2017) Master's degree (1 major) Biochemistry (2017)						
Master's degree (1 major) Biochemistry (2017) Master's degree (1 major) Biosciences (2018)						
	-	ee (1 major) Computatio		9)		
Master's wi	ith 1 majo	r Biochemistry (2017)		s • generated 19-Apr-2025 • e Master (120 ECTS) Biochemie	-	page 182 / 192

Master's degree (1 major) Mathematics (2019)

Master's degree (1 major) Biochemistry (2019)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020)

Master's degree (1 major) Biosciences (2021)

Master's degree (1 major) Computational Mathematics (2022)

Master's degree (1 major) Mathematics (2022)

Master's degree (1 major) Biosciences (2023)

Master's degree (1 major) Biosciences (2024)

Master's degree (1 major) Computational Mathematics (2024)

Master's degree (1 major) Mathematics (2024)

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2025)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 183 / 192
	data record Master (120 ECTS) Biochemie - 2017	

Module title				Abbreviation		
Methoo	ds in Li	fe Sciences			07-MLS1-152-m01	
Module	e coord	inator		Module offered by		
degree	progra	mme coordinator Biolo	gie (Biology)	Faculty of Biology		
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
10	nume	rical grade				
Duratio	on	Module level	Other prerequisites	i		
1 seme	ster graduate					
Conten	its					
models	s and ge	lecular techniques, lipi ene-knockout approach thods in bioinformatics	ies, protein and molec	ular biology techniqu		
Intende	ed learr	ning outcomes				
		able to review and expa nd techniques to design			techniques and are a	able to choo-
Course	S (type, n	umber of weekly contact hours	s, language — if other than Ge	rman)		
V (3) Module	e taugh	t in: English				
		eessment (type, scope, lang le for bonus)	uage — if other than German,	examination offered — if no	t every semester, informati	on on whether
d) oral Studen	examin its will l ige of a	ation of one candidate ation in groups of up to be informed about the ssessment: English	o 3 candidates (30 to 6	o minutes)	nt prior to the course	e.
Allocal		Jaces				
 Additio	nalinf	ormation				
Additio	matim					
Worklo	ad					
300 h Teachi i		•				
Teacini	ing LyLl	5				
 Doforro	d to in	LPO I (examination regulation				
Referre		LFUT (examination regulation	ons for teaching-degree progra	ammes)		
Module	e appea	irs in				
Master	Master's degree (1 major) Biochemistry (2015)					
Master's degree (1 major) Biology (2015)						
Master's degree (1 major) FOKUS Life Sciences (2015)						
Master's degree (1 major) Biosciences (2016)						
Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016)						
Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Master's degree (1 major) Biosciences (2017)						
Master's degree (1 major) Biosciences (2017) Master's degree (1 major) Biochemistry (2017)						
	Master's degree (1 major) Biochemistry (2017) Master's degree (1 major) Biosciences (2018)					
	-	ee (1 major) Biochemist				
	_					·
Master's wi	ith 1 major	r Biochemistry (2017)		g • generated 19-Apr-2025 • e Master (120 ECTS) Biochemie	-	page 184 / 192

Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2020) Master's degree (1 major) Biosciences (2021)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 185 / 192
	data record Master (120 ECTS) Biochemie - 2017	

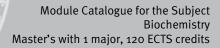
Module title Abbreviation					
Anima	l scienc	e and welfare			03-VTK-152-m01
Modul	e coord	inator		Module offered by	<u>I</u>
Anima	l Welfaı	e Officer of the University	/ of Würzburg	Faculty of Medicine	
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
3	(not)	successfully completed			
Durati	on	Module level	Other prerequisites		
1 seme	ester	undergraduate	Regular attendance the course).	of practical course (as specified at the beginning of
Conter	nts				
Theore mal sc		nd practical basic knowle	dge of animal welfare	e legislation, animal	welfare ethics and laboratory ani
Intend	ed lear	ning outcomes			
Studer SA (Ca		e the expertise to carry ou	It or participate in an	imal experiments ac	cording to the guidelines of FELA-
Course	es (type, r	number of weekly contact hours, l	anguage — if other than Gei	rman)	
V (2) +	P (1)				
		sessment (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether
		nation (approx. 90 minut ssessment: German and			
Allocat	tion of	places			
Additio	onal inf	ormation			
Worklo	bad				
90 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Master's degree (1 major) Biochemistry (2015)					
		ee (1 major) Biochemistry			
Master	r's degr	ee (1 major) Biochemistry	(2019)		

Module title Abbreviat					Abbreviation
Scienti	fic lect	uring M1			08-MBC-WR1-152-m01
Module coordinator				Module offered by	
chairpe mistry)	erson o	f examination committee	Biochemie (Bioche-	Chair of Biochemis	try
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	(not)	successfully completed			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
		ives students the opport I Pharmacy and learn hov			lecture offered by the Faculty of priate manner.
Intende	ed lear	ning outcomes			
Studen needs.	ts are a	able to teach students in	earlier stages of thei	r degrees and tailor	their teaching to those students'
Course	S (type, 1	number of weekly contact hours, l	anguage — if other than Gei	rman)	
Т (о)					
		Sessment (type, scope, langua Ile for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether
		supervising study group ssessment: German and,		prox. 2 pages)	
Allocat	ion of	olaces			
Additio	nal inf	ormation			
Worklo	ad				
150 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Master's degree (1 major) Biochemistry (2015)					
	-	ee (1 major) Biochemistry			
Master	's degr	ee (1 major) Biochemistry	(2019)		

Module title Abbreviation					Abbreviation	
Assista	nce in	practical courses 1			08-MBC-AWA1-152-m01	
Module coordinator				Module offered by	1	
chairpe mistry)	erson of	f examination committee	Biochemie (Bioche-	Chair of Biochemis	try	
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)		
5	(not) s	successfully completed				
Duratio	n	Module level	Other prerequisites			
1 seme	ster	graduate				
Conten	ts					
tical ex	perime				of their degrees through a prac- e experiments in a responsible	
Intende	ed learı	ning outcomes				
		able to guide students in o instruct others in the la		r degrees through pi	ractical experiments and have	
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	rman)		
T (o)						
		essment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether	
		supervising student lab ssessment: German and		oort (approx. 1 page)		
Allocat	ion of p	olaces				
Additio	nal inf	ormation				
Worklo	ad					
150 h						
Teaching cycle						
Referred to in LPO I (examination regulations for teaching-degree programmes)						
Module	e appea	irs in				
	Master's degree (1 major) Biochemistry (2015)					
		ee (1 major) Biochemistry				
Master	's degr	ee (1 major) Biochemistry	r (2019)			

Module	e title				Abbreviation
Literatu	ure sen	ninar 3			08-MBC-LIT3-152-m01
Module	e coord	inator		Module offered by	
chairpe mistry)	erson of	f examination committee	Biochemie (Bioche-	Chair of Biochemist	try
ECTS	Metho	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
present sions o	tations f the re	on those publications to	their classmates. Th tact the module coor	ose presentations w	in the life sciences and deliver ill be followed by critical discus- to find out if you can use this mo-
Intende	ed learı	ning outcomes			
	d of the				piochemistry-related literature in and discussion of scientific in-
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
S (2) Module	e taugh	t in: German or English			
		essment (type, scope, langua le for bonus)	ge — if other than German, o	examination offered — if no	ot every semester, information on whether
		20 to 40 minutes) ssessment: German and,	/or English		
Allocat	ion of p	olaces			
Additio	nal inf	ormation			
Worklo	ad				
150 h					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
	-	ee (1 major) Biochemistry			
	•	ee (1 major) Biochemistry			
Master's degree (1 major) Biochemistry (2019)					





Thesis Area (30 ECTS credits)

Master's with 1 major Biochemistry (2017)	JMU Würzburg • generated 19-Apr-2025 • exam. reg.	page 190 / 192
	data record Master (120 ECTS) Biochemie - 2017	



Module title					Abbreviation
Final Co	olloqui	um			08-MBC-KOLL-152-m01
Module coordinator				Module offered by	<u>.</u>
chairpe mistry)	erson o	f examination committee	Biochemie (Bioche-	Chair of Biochemis	try
ECTS	Meth	od of grading	Only after succ. con	npl. of module(s)	
5	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
Studen dience.		ver a presentation on the	findings of their Mas	ter's thesis and criti	cally discuss them with their au
Intende	ed lear	ning outcomes			
					r choice of experimental me- gs in a scientific discussion.
Course	S (type, 1	number of weekly contact hours, l	anguage — if other than Ge	rman)	
K (o)					
		s essment (type, scope, langua ole for bonus)	ge — if other than German,	examination offered — if no	ot every semester, information on whether
		um (approx. 45 minutes) issessment: German and	/or English		
Allocat	ion of	places			
Additio	nal inf	ormation			
Worklo	ad				
150 h					
Teaching cycle					
Referre	d to in	LPO I (examination regulation	s for teaching-degree progra	ammes)	
Module	appea	ars in			
	-	ee (1 major) Biochemistry	-		
	-	ee (1 major) Biochemistry			
Master	's degr	ee (1 major) Biochemistry	(2019)		

Module title					Abbreviation
Master-Thesis					08-MBC-MA-152-m01
Module	coord	inator		Module offered by	
chairpe mistry)	erson of	f examination committee	Biochemie (Bioche-	Chair of Biochemist	try
ECTS	Metho	od of grading	Only after succ. com	pl. of module(s)	
25	nume	rical grade			
Duratio	n	Module level	Other prerequisites		
1 seme	ster	graduate			
Conten	ts				
		ives students the opport scientific methods they h			problem within a given time frame
Intende	ed learı	ning outcomes			
of scier of good	ntific lit I scient	erature. They are able to	conduct research on evaluate and interpre	a defined problem/t	n a particular topic with the help topic adhering to the principles vell as to situate those findings
Course	S (type, n	umber of weekly contact hours, l	anguage — if other than Ger	man)	
No cou	rses as	signed to module			
		essment (type, scope, langua le for bonus)	ge — if other than German, e	examination offered — if no	ot every semester, information on whether
		s (approx. 60 pages) ssessment: German or Er	nglish		
Allocat					
Additio	nal inf	ormation			
Time to	compl	ete: 6 months.			
Worklo	ad				
750 h					
Teachi	ng cycl	e			
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Master	's degr	ee (1 major) Biochemistry	r (2015)		
	-	ee (1 major) Biochemistry			
Master's degree (1 major) Biochemistry (2019)					